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UES

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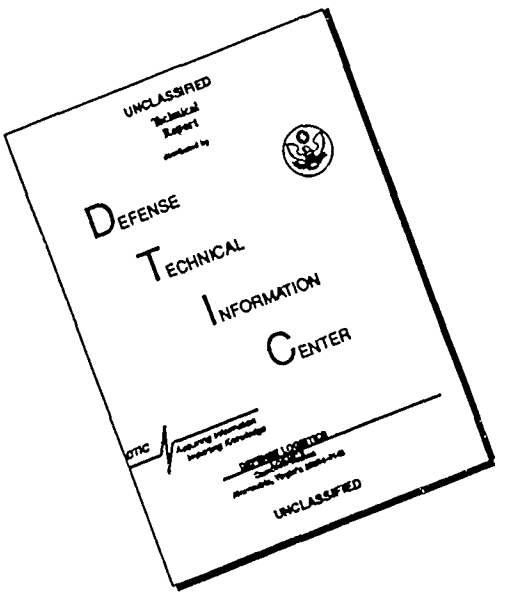

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APPENDIX A

LABORATORY GRADUATE FELLOWSHIP PROGRAM

FORMS

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
		Annual

4. TITLE AND SUBTITLE

Laboratory Graduate Fellowship Program

Appendix A

5. FUNDING NUMBERS

61102F
2306/D6

6. AUTHOR(S)

Dr. Darrah, Lt. Col Claude Cavender

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Universal Energy Systems Inc.

8. PERFORMING ORGANIZATION REPORT NUMBER

AFOSR-TR- 90 0694

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

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Bld 410
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I. INTRODUCTION

Critical to the success of the Air Force Office of Scientific Research (AFOSR) mission is the ability of AFOSR to draw upon the research community in the United States to respond to its needs. In recent years, however, the number of U. S. citizens seeking advanced degrees in the areas of Air Force research interests has been decreasing. This refers specifically to the number of U. S. citizens obtaining Ph.D. degrees in areas of mathematics and science that are of interest to the Air Force. This situation points toward the potential problem of a future shortage of qualified researchers in areas critical to the nation's security interest.

To address this problem, the United States Air Force Laboratory Graduate Fellowship Program (USAF/LGFP) was established. The contract is funded under the Air Force Systems Command by the AFOSR. The program annually provides three-year fellowships for at least 25 Ph.D. students in research areas of interest to the Air Force. Universal Energy Systems, Inc. (UES) has completed the third year of the three-year LGF program contract.

This report, prepared in compliance with contractual requirements, covers the third year of the program which now sponsors 27 first-year participants as well as 25 second-year fellows and 22 third year fellows for a total of 74 active fellowships. The report addresses an overview of the administration tasks, statistics on the 1989 awards, profiles of all the fellows, and summarized results of the evaluation process. Materials deemed inappropriate for inclusion in the main body of the report, such as samples of forms, complete questionnaire results, etc., are included in the appendices.

II. ADMINISTRATION

The administration of the LGF program is conducted from the Dayton offices of UES. The staff consists of Mr. Rodney C. Darrah, Program Manager; Ms. Judy Conover, Program Administrator; and support personnel. Most members of the 1989 program administration team have been involved with the project since award of the contract to UES. This element of an experienced, stable staff ensures program continuity and contributes to successful operation of administrative tasks.

The primary tasks in managing the program consist of advertising (which includes compiling and updating a mailing list, and preparing and distributing ads, flyers, and

Exhibit A-1
Advertisement

Exhibit A-2
Flyer

Exhibit A-2
Flyer

AIR FORCE LABORATORY GRADUATE FELLOWSHIPS

AFOSR

United States Air Force Office of Scientific Research

1988

UES

Fellowships for graduate studies leading to doctoral degrees in selected science/engineering disciplines

U.S. Citizens Only
Application Deadline: 31 January 1988
Appointments by: 31 March 1988

Introduction: The Air Force Office of Scientific Research (AFOSR) has established a fellowship program for graduate studies at U.S. institutions offering degrees in selected fields.

Objective: To increase the number of U.S. PhD's in areas critical to the U.S. Air Force research interests. Each Laboratory Fellowship will be sponsored by an Air Force laboratory.

Eligibility: Graduates must be U.S. citizens with baccalaureate by 1988.

Terms: Stipends of $13,000 will be paid for the first year of the program. AFOSR will provide full tuition and fees and pay $2,000 to the Laboratory Fellow's department.

Tenure: Three years (providing satisfactory academic progress).

Laboratory Graduate Fellowships awarded under this program will be for the following disciplines:

- Electrical Engineering
- Mechanical Engineering
- Aeronautical and Astronautical Engineering
- Biomedical Engineering
- Chemical, Industrial and Civil Engineering
- Physics
- Computer Modeling and Computer Science
- Toxicology
- Chemistry
- Mathematics
- Behavioral Sciences
- Metallurgy
- Meteorology and Geophysics
- Life Sciences, Biology and Biophysics

For information and applications send the forms below to:

USAF-LGFP
Universal Energy Systems, Inc.
4401 Dayton-Xenia Rd.
Dayton, Ohio 45432

OR CALL
Mr. Rodney C. Darrah
or Ms. Judyth L. Conover
1-(800)-533-7532

UES supports equal opportunity/affirmative action

Please send additional information
USAF-LGFP

Name_____

Address_____

_____

Universal Energy Systems,Inc
4401 Dayton-Xenia Rd.
Dayton, Ohio 45432

Please send additional information
USAF-LGFP

Name_____

Address_____

_____

Universal Energy Systems, Inc
4401 Dayton-Xenia Rd.
Dayton, Ohio 45432

Exhibit A-3
Brochure

AIR FORCE LABORATORY GRADUATE FELLOWSHIPS

UNITED STATES AIR FORCE
OFFICE OF SCIENTIFIC RESEARCH

LABORATORY GRADUATE
FELLOWSHIP PROGRAM

1989

conducted by

UES Universal Energy Systems

UNITED STATES AIR FORCE

Critical to the success of the mission of the United States Air Force is the ability to draw upon the U.S. research community to respond to its needs. In recent years however, the number of U.S. citizens seeking advanced degrees in areas critical to the USAF has been decreasing. Specifically, the number of U.S. citizens obtaining PhD degrees in the Mathematical, Engineering, and Scientific areas of Air Force interest has been decreasing. This points toward a future potential problem of a shortage of qualified U.S. researchers in areas critical to the nation's security interest.

To address this problem, the United States Air Force Laboratory Graduate Fellowship Program has been instituted by the Air Force Office of Scientific Research (AFOSR). The graduate fellows will be undertaking research and studies at various universities across the United States, sponsored by one of the Air Force laboratories.

United States Air Force Laboratory Graduate Fellowships awarded in 1989 will be for research and study in the disciplines listed at the back of this brochure. Preference will be given to applicants who indicate an intention to pursue continuous study leading to a doctoral degree in one of these specialities.

ELIGIBILITY

United States Air Force Laboratory Graduate Fellowships are limited to citizens of the United States. Eligibility is further limited to those individuals who will have received their baccalaureate degree by 1989. To qualify for consideration, a complete Air Force Laboratory Graduate Fellowship application must be submitted.

APPLICATIONS

The complete application consists of (1) A Completed Personal Information Form; (2) Transcripts; (3) Graduate Record Examination results (GRE General Test only); and (4) Three letters of recommendation.

LOCATION OF EFFORT

The Air Force Laboratory Graduate Fellowships are applicable to any United States institution of higher education offering doctoral degrees in the designated critical disciplines.

DURATION OF FELLOWSHIP

The normal duration of the Air Force laboratory Fellowship is 12 months for three consecutive years. The duration may be no less than 9 months for any fellowship year, with forfeiture of the stipends for the remaining months.

Fellows who remain on the fellowship during the summer and attend institutions which have no formal summer session must make approved arrangements for supervised research or study toward their doctoral degree for the summer.

Laboratory fellows are encouraged to continue their studies in the summers at the Air Force laboratories. Each fellow will be appointed an Air Force laboratory mentor to interface with during the Fellowship. The sponsoring laboratory will work with the fellows and their advisors to make arrangements for the summer research periods at the Air Force laboratories when feasible.

Fellows selected in 1989 are expected to start their fellowships within 6 months from the date of award announcement. The availability of the second and third year of a three-year award is contingent upon (1) certification to the Air Force laboratory by the fellow's institution that satisfactory progress toward a doctoral degree in the selected discipline is being made by the fellow, and (2) the availability of funds for this continued effort.

STIPENDS AND EDUCATION EXPENSES

Air Force Laboratory Graduate Fellows selected in 1989 will receive stipends of $13,000 for the first year, $14,000 for the second year, and $15,000 for the third year. Stipends will be prorated for fellowship periods shorter than 12 months. The Air Force will pay for one round trip of 3 days duration to visit the appointed laboratory mentor at the appropriate Air Force laboratory. There are no dependency allowances under this fellowship.

In addition to the stipends, the Air Force will pay the fellow's institution full tuition and required fees (not to include room and board) and provide $2,000 per year to the fellow's department.

SUMMERS AT AIR FORCE LABORATORIES

Laboratory fellows are encouraged to continue their research and studies in the summers at an

Air Force laboratory. This affords the unique opportunity to participate in a dynamic R&D environment and to work with distinguished Air Force researchers. Fellows will be notified each year of the current summer opportunities at the Air Force laboratories.

Under this program, Graduate Students may spend at least 10 weeks during the summer pursuing research at the sponsoring laboratory. Travel and living expenses are provided to the students under this program.

EVALUATION AND SELECTION

Laboratory Graduate Fellowships are awarded on the basis of ability. The evaluation of applicants is based on all available evidence of ability, including academic records, the Graduate Record Examination, and recommendations regarding each applicant's qualifications.

Each applicant's qualifications will be reviewed by panels of scientists and engineers selected by the Air Force laboratories and Universal Energy Systems, Inc., the administrator of the program. Final selection of awardees will be made by AFOSR. Award of the fellowship is contingent upon admission to a suitable course of graduate study.

CONDITIONS OF APPOINTMENT

Fellows will be required to enroll in full-time programs leading to doctoral degrees in the selected fields. Such programs include a reasonable amount of teaching or similar activities that, in the advisor's opinion, contribute to the fellow's academic progress. Scholarly development of the fellows, not service to the affiliated institutions, will govern the assignment of these activities.

The Laboratory Fellowship is for a three-year period of continuous study. Leave of absence for other than summer break will generally not be granted.

After an award is made, a major change in course of study or institution by a fellow requires prior Air Force approval. A request to change institutions after beginning tenure will be considered by the Air Force laboratory where significant reasons are provided by the fellow.

The results of research carried out by the fellow may be made public without restrictions except as is required in the interest of national security.

APPLICATION MATERIALS

Application materials may be obtained from:
UNIVERSAL ENERGY SYSTEMS, INC.
USAF-LGFP
4401 Dayton-Xenia Road
Dayton, OH 45432
Telephone: 800/533-7532
or 513/426-9876

APPLICATIONS AND AWARD DATES

The deadline for filing applications for the Air Force Laboratory Graduate Fellowships with Universal Energy Systems, Inc. (UES) is January 31, 1989. An application postmarked after that date will not be considered. All inquires concerning applications should be directed to UES at the address or telephone number shown.

UES will notify all applicants by letter, of the outcome of their applications on or about March 31, 1989.

Laboratory Graduate Fellowships awarded under this program will be for the following disciplines:

- Electrical Engineering
- Mechanical Engineering
- Aeronautical and Astronautical Engineering
- Biomedical Engineering
- Chemical, Industrial and Civil Engineering
- Physics
- Computer Modeling and Computer Science
- Toxicology
- Chemistry
- Mathematics
- Behavioral Sciences
- Metallurgy, Materials Science, and Ceramic Engineering
- Meteorology and Geophysics
- Life Sciences, Biology and Biophysics

AIR FORCE LABORATORIES

AERO PROPULSION LABORATORY
Wright-Patterson AFB (Dayton), Ohio

Turbomachinery
Combustion Systems
Energy Conversion
Turbine Heat Transfer
Computational Fluid Dynamics
Power Systems Technology
High Speed Aerodynamics
Three-Dimensional Viscous Aerodynamics

ARMAMENT LABORATORY
Eglin AFB (Fort Walton Beach), Florida

Computational Fluid Dynamics
Optimal Guidance and Control
Continuum Mechanics
Kinetics and Synthesis of Energetic Materials
Real-Time Infrared Image Recognition Algorithms
Plasma Physics (Electromagnetic Launchers)

ASTRONAUTICS LABORATORY
Edwards AFB (Lancaster), California

Energy Conversion Mechanisms
Spacecraft Dynamics and Control
Filled Elastomer Adhesion
Carbon-Carbon Composites
Cryogenic Spectroscopy
Molecular Cluster Trapping
Ab-Initio Calculation of High Energy Density Matter
Plasma Diagnostics

AVIONICS LABORATORY
Wright-Patterson AFB (Dayton), Ohio

Artifical Intelligence
Epitaxial and Bulk Crystal Growth
(III-V Semiconductors)
Electronics Design Automation
Materials and Devices for Optical Processing
Architectures and Algorithms for Optical Processing
Nonlinear Optical Materials
Adaptive Neural Networks
Learning Vision Technology
Semiconductor Characterization
High Speed III-V Integrated Circuits
Microwave and Millimeter Wave Devices
and Integrated Circuits

ENGINEERING AND SERVICES CENTER
Tyndall AFB (Panama City), Florida

Environmental Chemistry
Biodegradation of Organic Compounds
Very High Pressure Behavior of Pavement Materials
Knowledge Based Systems (Structural Analysis)
Fuel Fire Neutralization Agents
High Stress Rate Response of Civil Engineering
Materials
Pollutant Transport in the Atmosphere
Response of Pavement Construction Materials
Reliability of Civil Engineering System
Knowledge-Based Expert Systems for Civil Engineering
Systems (Structures, Utilities, Pavements)
High Strain Rate Response of Civil Engineering
Materials
Chemistry of Fire and Fire Surpression
Pollutant Reduction Technology
Subsurface Fate and Transport of Pollutants

FLIGHT DYNAMICS LABORATORY
Wright-Patterson AFB (Dayton), Ohio

Computational Fluid Dynamics
Fracture and Fatigue of Composites and Metals
Nonlinear Flight Mechanics
Hypersonic Flows
High Temperature Structural Behavior
Unsteady Aerodynamics
Multi-Discipline Structural Optimization
Robust Multivariable Control Systems

FRANK J. SEILER RESEARCH LABORATORY
USAF Academy (Colorado Springs), Colorado

Nonlinear Fiber Optics
Short Wavelength Laser Research
Unsteady Aerodynamics
Chemistry of Energetic Materials
Electrochemical and Energetic Materials Systems
Chemistry of Tetrachloroaluminate Melts
Low-Melting Tetrachloroaluminate Batteries
Theoretical Chemical Techniques for Studing Energetic
Materials, Tetrachloroaluminate Melts and Polymers

GEOPHYSICS LABORATORY
Hanscom AFB (Boston), Massachusetts

Space Physics
Chonospheric Physics
Atmospheric Sciences
Optical Physics
Infrared Technology
Earth Sciences

HARRY G. ARMSTRONG AEROSPACE MEDICAL RESEARCH LABORATORY
Wright-Patterson AFB (Dayton), Ohio

Bioengineering and Biodynamics (BB)
- Biocommunications
- Biomechanics
- Robotics

Human Factors Engineering (HE)
- Optical Engineering
- Human Factors Engineering
- Artificial Intelligence
- Perception
- Cognition
- Anthropometry

Toxicology (TH)
- Biochemistry
- Biological Simulation
- Pharamacokinetic Modeling
- Toxicology

HUMAN RESOURCES LABORATORY
Brooks AFB (San Antonio), Texas

Individual Differences in Cognitive Processes
Cognitive Processes and Learning
Skill Acquisition and Intelligent Tutor Systems
Models of Cognitive Processes
Visual Perception
Cognitive Processes, Automaticity and Memory
Knowledge Acquisition and Artificial Intelligence
Techniques
Job and Training Performance Evaluation
Computer-Based Instruction

MATERIALS LABORATORY
Wright-Patterson AFB (Dayton), Ohio

Ceramic Composites
Intermetallic Compounds
Quantitative Non-Destructive Evaluation
Molecular Composites
Tribology
Materials Processing Modeling
Molecular Beam Epitaxy
Computer Integral Manufacturing
Nonlinear Optical Materials

ROME AIR DEVELOPMENT CENTER
Griffiss AFB (Rome), New York

Photonics/Optical Processing
Artificial Intelligence/Expert Systems
Software
Distributed Processing
Signal Processing
Reliability/Maintainability
Communication Theory
Communications Networks
Image Processing

ROME AIR DEVELOPMENT CENTER
Hanscom AFB (Bedford), Massachusetts

Antenna Technology
Electromagnetic Scattering
Solid State Materials/Devices
Monolithic Microwave Integrated Circuits

SCHOOL OF AEROSPACE MEDICINE
Brooks AFB (San Antonio), Texas

Cardiovascular Physiology
Electromagnetic Radiation Physics
Environmental Physiology
Life Support System Bioengineering
Hyperbaric Medicine
Analytical Chemistry
Sensory Physiology/Psychology
Neurophysiology
Neurochemistry
Laser Biophysics
Vision and Perception

WEAPONS LABORATORY
Kirtland AFB (Albuquerque), New Mexico

High Power Microwaves
High Energy Lasers
Nuclear Engineering
Civil Engineering
Lethality Assessment
Scientific Computing

Exhibit A-4
Application Form

UNITED STATES AIR FORCE-LABORATORY GRADUATE FELLOWSHIPS
UNIVERSAL ENERGY SYSTEMS, INC.
AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

APPLICATION INSTRUCTIONS AND FORMS

Privacy Assurance: The information which you provide following these instructions for completing the attached forms will be used solely for selecting Laboratory Fellows and will be disclosed only to members of the selection panel formed for this purpose by Universal Energy Systems (UES) and to those officials in the Air Force and UES responsible for the administration of the fellowship program. Aggregated data based on the application materials may be used in management reports designed to evaluate the direction and progress of the program as a whole. Attribution of specific data to individual applicants will be avoided.

Provision of information is voluntary and omission of any particular item not necessary to establish your eligibility will not prejudice the review of your application. In order to determine the degree to which members of diverse sections of the eligible population are aware of and apply for this program so that all eligible students are afforded equal opportunity for consideration, you are asked to fill in the blocks on the application form related to sex and race. Whether or not the appropriate blocks are checked, applicants will be considered for award of fellowships on merit and without regard to race, color, religion, national origin, sex, or age.

Note: Upon completion of their tenure, Laboratory fellows have *no* military obligation and are *not* required to work for the Air Force.

Eligibility: Laboratory Graduate Fellowships are limited to citizens of the United States. Eligibility is further limited to those individuals who will receive their baccalaureate degree by the program year.

Applications will be accepted only for study or research required for a doctoral degree in the disciplines listed on the attached Laboratory List.

Application Instructions: To be considered for an appointment, candidates must submit a complete application to:

Laboratory Graduate Fellowships
UES
4401 Dayton-Xenia Road
Dayton, OH 45432-1894

A complete application consists of the following:
1. Personal Information Form—Parts 1 and 2
2. Transcripts
3. Three letters of recommendation
4. Graduate Record Examination (General Test only)

Deadlines: A completed application including all the documents listed above must be submitted **postmarked not later than 31 January of the program year.**

Detailed Instructions: (Refer to the following instructions in completing your application. They are cross-referenced to the appropriate form.)

1a. Notification of action taken on your application will be sent by letter to the permanent address entered on the form. Your current institutional address will be used for this purpose only if no other address is available. Both addresses should be fully shown.

1b. Information provided here is to help UES and the Air Force assure that the program information is being presented to the widest possible population. Whether or not these blocks are filled in, applicants will be considered for award of fellowship based on merit.

1c. All applicants must be citizens or nationals of the United States.

1d. In general, fellows selected are expected to enter on tenure no later than six months from the date of award announcement.

1e. Laboratory Graduate Fellowships are tenable only at U.S. institutions of higher education offering doctoral degrees in the areas of science and engineering designated in the attached Laboratory List. It is not necessary that you will have applied for or been accepted in such a graduate program at the time this application is submitted. In that case, the information supplied should reflect your plan or preference at the time of submission. Should you be selected, appointment will be contingent upon subsequent admission to a suitable graduate program. You should, however, determine the admission requirements of the institution or institutions of your choice as soon as possible.

1f. Provide name and occupational supervisor only if your current assignment is providing you with experience and training related to your proposed graduate study. Indicate whether this person will be one of your three references as specified in instruction 3 on back.

2. An official transcript of course credits must be submitted from each institution listed. Transcripts should be

LABORATORY LIST

LABORATORY 1:
AERO PROPULSION LABORATORY
Wright-Patterson AFB, (Dayton), Ohio

Research Programs in Airbreathing Propulsion, Aerospace Power, Fuels and Lubrication, and Aircraft Fire Protection Technology.

AREAS OF RESEARCH INTEREST:
a. Turbomachinery
b. Combustion Systems
c. Energy Conversion
d. Turbine Heat Transfer
e. Computational Fluid Dynamics
f. Power Systems Technology
g. High Speed Aerodynamics
h. Three-Dimensional Viscous Aerodynamics

LABORATORY 2:
ARMAMENT LABORATORY
Elgin AFB, (Fort Walton Beach), Florida

Research for Non-Nuclear Armament and Related Equipment.

AREAS OF RESEARCH INTEREST:
a. Computational Fluid Dynamics
b. Optimal Guidance and Control
c. Continuum Mechanics
d. Kinetics and Synthesis of Energetic Materials
e. Real-Time Infrared Image Recognition Algorithms
f. Plasma Physics (Electromagnetic Launchers)

LABORATORY 3:
ASTRONAUTICS LABORATORY
Edwards AFB, (Lancaster), California

Research in the Chemical, Physical and Aerospace Sciences relating to Rocket Propulsion and Interdisciplinary Space Technology for future ICBMs: Air-Launched Missiles, Space Launch Vehicles and Spacecraft.

AREAS OF RESEARCH INTEREST:
a. Energy Conversion Mechanisms
b. Spacecraft Dynamics and Control
c. Filled Elastomer Adhesion
d. Carbon-Carbon Composites
e. Cryogenic Spectroscopy
f. Molecular Cluster Trapping
g. Ab-Initio Calculations of High Energy Density Matter
h. Plasma Diagnostics

LABORATORY 4:
AVIONICS LABORATORY
Wright-Patterson AFB, (Dayton), Ohio

Avionics Research to Reduce Acquisition and Operating Costs and Improve Operational Capabilities.

AREAS OF RESEARCH INTEREST:
a. Artificial Intelligence
b. Epitaxial and Bulk Crystal Growth (III-V Semiconductors)
c. Electronics Design Automation
d. Materials and Devices for Optical Processing
e. Architectures and Algorithms for Optical Processing
f. Nonlinear Optical Materials
g. Adaptive Neural Networks
h. Learning Vision Technology
i. Semiconductor Characterization
j. High Speed III-V Integrated Circuits
l. Microwave and Millimeter Wave Devices and Integrated Circuits

LABORATORY 5:
ENGINEERING AND SERVICES CENTER
Tyndall AFB, (Panama City), Florida

Research in the Areas of Civil Engineering and Environment Quality.

AREAS OF RESEARCH INTEREST:
a. Environmental Chemistry
b. Biodegradation of Organics Compounds
c. Very High Pressure Behavior of Pavement Materials
d. Knowledge Based Systems (Structural Analysis)
e. Fuel Fire Neutralization Agents
f. High Stress Rate Response of Civil Engineering Materials
g. Pollutant Transport in the Atmosphere
h. Response of Pavement Construction Materials
i. Reliability of Civil Engineering System
j. Knowledge-Based Expert Systems for Civil Engineering Systems (Structures, Utilities, Pavements)
k. High Strain Rate Response of Civil Engineering Materials
l. Chemistry of Fire and Fire Surpression
m. Pollutant Reduction Technology
n. Subsurface Fate and Transport of Pollutants

LABORATORY 6:
FLIGHT DYNAMICS LABORATORY
Wright-Patterson AFB, (Dayton), Ohio

Research Programs for Aerospace Flight Vehicle Structur Aerodynamics, Flight Control, Dynamics and Equipment.

AREAS OF RESEARCH INTEREST:
a. Computational Fluid Dynamics
b. Fracture and Fatigue of Composites and Metals
c. Nonlinear Flight Mechanics
d. Hypersonic Flows
e. High Temperature Structural Behavior
f. Unsteady Aerodynamics
g. Multi-Discipline Structural Optimization
h. Robust Multivariable Control Systems

LABORATORY 7:
FRANK J. SEILER RESEARCH LABORATORY
USAF Academy, (Colorado Springs), Colorado

Research in Lasers, Aeromechanics, and Chemistry.

AREAS OF RESEARCH INTEREST:
a. Nonlinear Fiber Optics
b. Short Wavelength Laser Research
c. Unsteady Aerodynamics
d. Chemistry of Energetic Materials
e. Electrochemical and Energetic Materials Systems
f. Chemistry of Tetrachloroaluminate Melts
g. Low-Melting Tetrachloroaluminate Batteries
h. Theoretical Chemical Techniques for Studing Energetic Materials, Tetrachloroaluminate Melts and Polymers

LABORATORY 8:
GEOPHYSICS LABORATORY
Hanscom AFB, (Boston) Massachusetts

Research in Environmental and Physical Sciences with Major Emphasis on Geophysics.

AREAS OF RESEARCH INTEREST:
a. Space Physics
b. Ionospheric Physics
Atmospheric Sciences
c. Optical Physics
e. Infrared Technology
f. Earth Sciences

UNITED STATES AIR FORCE LABORATORY
GRADUATE FELLOWSHIP PROGRAM APPLICATION

Personal Information Form (Part 1)

Refer to attached instruction in completing this form. Please type or print clearly.

1.

Name _____

Current Address _____

_____

Telephone _____

Permanent Address (See instruction 1a.)

_____

_____

_____

Alternate Telephone _____

Date of Birth _____ ☐ Male

Place of Birth _____ ☐ Female

Social Security Number _____

Information Optional (see instruction 1b.)

Racial Minority: ☐ Yes ☐ No

☐ Black ☐ Hispanic ☐ Oriental

☐ American Indian

☐ Male

☐ Female

Citizenship (See instruction 1c.)

I am a citizen of the U.S.

☐ Yes ☐ No

Are you currently attending/have you previously attended graduate school?

☐ Yes ☐ No

Proposed starting date of fellowship
(See instruction 1d.)

Date: _____

Proposed field and place of study (see instruction 1e.)

Discipline _____

Sub-discipline _____

Institution _____

Department _____

Address _____

Are you currently enrolled in an institution of higher education at the baccalaureate level?
(See instruction 1f.)

Enrolled: Yes ☐ ☐ Baccalaurate Level ☐ Graduate Level

Department Chairman _____

University _____

Department _____

Address _____

_____

Enrolled: No ☐ State current occupation or military duty

_____

Supervisor/C.O. _____

Department/Unit _____

Address _____

_____

Reference: ☐ Yes ☐ No

Complete reverse side.

UNITED STATES AIR FORCE LABORATORY
GRADUATE FELLOWSHIP PROGRAM APPLICATION

Personal Information Form (Part 2)

Please type

1. Name: _____
last first middle maiden

2. Field of study: _____

3. Academic honors: _____

_____

4. Foreign languages:

Enter foreign language(s) and indicate your knowledge of each by placing "X" in proper column	Reading			Speaking			Understanding			Writing		
	Exc.	Good	Fair	Exc.	Good	Fair	Exc.	Good	Fair	Exc.	Good	Fair

5. List all scholarships, scientific or engineering student leadership roles, honors, awards, and any other recognition relevant to your field since entering college. *Include any scholarship or office of any kind held at time of submitting Application.*

POSITION	PLACE	DATE

6. In a concise statement, summarize the objectives of your educational program and your long-range professional goals (use extra sheet if needed).

(continued on reverse side)

UNITED STATES AIR FORCE LABORATORY
GRADUATE FELLOWSHIP PROGRAM

Reference Evaluation of Applicant

Applicants' qualifications evaluated for the Air Force Office of Scientific Research by panels of scientists and engineers appointed by the Universal Energy Systems, Inc. (UES). Awardees are selected by the Air Force Office of Scientific Research.

Please type or print all information requested on this form.

To be completed by applicant:
Name of Applicant

_____
last first middle maiden

Name of Respondent _____

Title _____

Respondent's Department _____

Respondent's Address _____

Respondent's Phone Number _____

Discipline _____

Sub-Discipline _____

Date Due _____
(See Application Instructions)

ACQUAINTANCE WITH APPLICANT:

1. I have known the applicant for a period of _____ years and/or _____ months
2. I have known the applicant as ☐ an undergraduate ☐ an employee ☐ in military service ☐ other (specify) _____
3. I have served as the applicant's ☐ teacher in several classes ☐ teacher in only one class ☐ department chairman ☐ other (specify) _____

COMMENTS: In the space below, please describe in some detail the applicant's abilities, and comment on his/her potential as a scientist/engineer, elaborating, where appropriate, on such matters as versatility, ability to make sound technical judgments, major academic strengths and weaknesses, if any, performance by the applicant, as an undergraduate, in independent study or in research-participation programs, and any other characteristics you deem pertinent. (Continue on reverse side if necessary.)

APPLICANT'S OVERALL SCIENTIFIC ABILITY: In comparison with a representative group of college seniors in the same field who have approximately the same amount of experience and training, how to you rate the applicant in GENERAL ALL-AROUND SCIENTIFIC ABILITY?

1 ☐ **Truly Exceptional.** Equivalent to the very best you have known—a person who, in your experience, appears once every few years.
2 ☐ **Outstanding.** Comparable to the best student in a current class. Highest 5%.
3 ☐ **Unusual.** Next highest 5%
4 ☐ **Above Average.** Ability easily identifiable, but not in upper 10%. Probably upper 15%. Certainly upper 25%
5 ☐ **Average.** Probably able to complete work to the Ph.D. degree. Upper 50%
6 ☐ **Below average.** Lower 50%

IMPORTANT—CONFIDENTIALITY: Before signing this report, you should check one of the two blocks at the right as applicable. If you wish to have your comments held in confidence so as not to reveal your identity as the author of these comments, you should check block A. If block A is checked, UES and AFOSR will honor your request to the extent permitted by law. If you fail to check either block your comments will be treated as confidential, but you are warned that your failure to check block A may result in a requirement to provide these comments to the applicant under the Privacy Act of 1974.

A ☐ **My preparation of this Reference Report is conditioned on the promise of UES or AFOSR to hold my identity as the author of these comments in confidence.**

B ☐ **My preparation of this Reference Report is not conditioned on the promise of UES or AFOSR to hold my comments in confidence.**

Signature of Respondent _____ Date _____

UNITED STATES AIR FORCE LABORATORY
GRADUATE FELLOWSHIP PROGRAM

Reference Evaluation of Applicant

Applicants' qualifications evaluated for the Air Force Office of Scientific Research by panels of scientists and engineers appointed by the Universal Energy Systems, Inc. (UES). Awardees are selected by the Air Force Office of Scientific Research

Please type or print all information requested on this form.

To be completed by applicant:
Name of Applicant

_____
last first middle maiden

Name of Respondent _____

Title _____

Discipline _____ _____

Respondent's Department _____

Sub-Discipline _____

Respondent's Address _____

Date Due _____
(See Application Instructions)

Respondent's Phone Number _____

ACQUAINTANCE WITH APPLICANT:

1. I have known the applicant for a period of _____ years and/or _____ months.
2. I have known the applicant as ☐ an undergraduate ☐ an employee ☐ in military service ☐ other (specify) _____
3. I have served as the applicant's ☐ teacher in several classes ☐ teacher in only one class ☐ department chairman ☐ other (specify) _____

COMMENTS: In the space below, please describe in some detail the applicant's abilities, and comment on his/her potential as a scientist/engineer, elaborating, where appropriate, on such matters as versatility, ability to make sound, technical judgments, major academic strengths and weaknesses, if any, performance by the applicant, as an undergraduate, in independent study or in research-participation programs; and any other characteristics you deem pertinent. (Continue on reverse side if necessary.)

APPLICANT'S OVERALL SCIENTIFIC ABILITY: In comparison with a representative group of college seniors in the same field who have approximately the same amount of experience and training, how to you rate the applicant in GENERAL ALL-AROUND SCIENTIFIC ABILITY?

1 ☐ **Truly Exceptional.** Equivalent to the very best you have known—a person who, in your experience, appears once every few years.
2 ☐ **Outstanding.** Comparable to the best student in a current class. Highest 5%.
3 ☐ **Unusual.** Next highest 5%.
4 ☐ **Above Average.** Ability easily identifiable, but not in upper 10%. Probably upper 15%. Certainly upper 25%.
5 ☐ **Average.** Probably able to complete work to the Ph.D. degree. Upper 50%.
6 ☐ **Below average.** Lower 50%.

IMPORTANT—CONFIDENTIALITY: Before signing this report, you should check one of the two blocks at the right as applicable. If you wish to have your comments held in confidence so as not to reveal your identity as the author of these comments, you should check block A. If block A is checked, UES and AFOSR will honor your request to the extent permitted by law. If you fail to check either block your comments will be treated as confidential, but you are warned that your failure to check block A may result in a requirement to provide these comments to the applicant under the Privacy Art of 1974.

A ☐ **My preparation of this Reference Report is conditioned on the promise of UES or AFOSR to hold my identity as the author of these comments in confidence.**

B ☐ **My preparation of this Reference Report is not conditioned on the promise of UES or AFOSR to hold my comments in confidence.**

Signature of Respondent _____ Date _____

UNITED STATES AIR FORCE LABORATORY
GRADUATE FELLOWSHIP PROGRAM

Reference Evaluation of Applicant

Applicants qualifications evaluated for the Air Force Office of Scientific Research by panels of scientists and engineers appointed by the Universal Energy Systems, Inc. (UES). Awardees are selected by the Air Force Office of Scientific Research.

Please type or print all information requested on this form.

To be completed by applicant:
Name of Applicant

_____
last first middle maiden

Name of Respondent _____

Title _____

Discipline _____

Respondent's Department _____

Sub-Discipline _____

Respondent's Address _____

Date Due _____
(See Application Instructions)

Respondent's Phone Number _____

ACQUAINTANCE WITH APPLICANT:

1. I have known the applicant for a period of _____ years and/or _____ months
2. I have known the applicant as ☐ an undergraduate ☐ an employee ☐ in military service ☐ other (specify) _____
3. I have served as the applicant's ☐ teacher in several classes ☐ teacher in only one class ☐ department chairman ☐ other (specify) _____

COMMENTS: In the space below, please describe in some detail the applicant's abilities, and comment on his/her potential as a scientist/engineer elaborating, where appropriate, on such matters as versatility, ability to make sound, technical judgments, major academic strengths and weaknesses, if any, performance by the applicant, as an undergraduate, in independent study or in research-participation programs, and any other characteristics you deem pertinent. (Continue on reverse side if necessary.)

APPLICANT'S OVERALL SCIENTIFIC ABILITY: In comparison with a representative group of college seniors in the same field who have approximately the same amount of experience and training, how to you rate the applicant in GENERAL ALL AROUND SCIENTIFIC ABILITY?

1 ☐ **Truly Exceptional.** Equivalent to the very best you have known—a person who, in your experience, appears once every few years.
2 ☐ **Outstanding.** Comparable to the best student in a current class. Highest 5%.
3 ☐ **Unusual.** Very highest 5%.
4 ☐ **Above Average.** Ability easily identifiable, but not in upper 10%. Probably upper 15% Certainly upper 25%
5 ☐ **Average.** Probably able to complete work to the Ph.D. degree. Upper 50%.
6 ☐ **Below Average.** Lower 50%

IMPORTANT—CONFIDENTIALITY: Before signing this report, you should check one of the two blocks at the right as applicable. If you wish to have your comments held in confidence so as not to reveal your identity as the author of these comments, you should check block A. If block A is checked, UES and AFOSR will honor your request to the extent permitted by law. If you fail to check either block your comments will be treated as confidential, but you are warned that your failure to check block A may result in a requirement to provide these comments to the applicant under the Privacy Art of 1974.

A ☐ **My preparation of this Reference Report is conditioned on the promise of UES or AFOSR to hold my identity as the author of these comments in confidence.**

B ☐ **My preparation of this Reference Report is not conditioned on the promise of UES or AFOSR to hold my comments in confidence.**

Signature of Respondent _____ Date _____

Exhibit A-5
Notification Letter

Universal Energy Systems, Inc.

-Date-

-Fellow-
-Address-

SUBJECT: Notification of Appointment to the USAF Laboratory Graduat Fellowship Program (LGFP)

REFERENCE: Your 1989 LGFP Application

Dear :

1. Universal Energy Systems Inc. (UES) is pleased to advise you that y have been accepted for appointment to the LGFP as a graduate fellow pursue a doctoral degree at a U.S. institution of higher education the area of (Research Area). Please contact your Air Force laborato advisor to finalize the area of study that you are to pursue. If yo encounter any problems or have questions concerning the area of stu please contact UES.

2. Upon receipt of your reply UES will contact the (University) for th purpose of preparing an agreement which will support your fellowshi tenure. If you have not already enrolled in and been accepted by a accredited university, final arrangements must be made and this offic must be notified as soon as possible so necessary arrangements can made to consummate an agreement between UES and t fellowshi institution. The agreement will provide for payment to you of stipend at the rate of $10,000 for the academic year and $3,000 for the summe term during your enrollment. However, the United States Air Forc Office of Scientific Research plans to increase the stipend t $15,000.00 effective for the 1989-90 academic year. This stipend increase is contingent on the successful modification of the curren contract. Tuition and fees, not to include room and board, will be paid to the fellowship institution as well as $2,000 per year to the Department in which you are enrolled.

3. There are no dependency or travel allowances. However, a one time travel allowance will be paid for your orientation visit to the (Air Force Lab) Laboratory at (Lab Address) to which you will be assigned. The purpose of the visit is to meet your Air Force laboratory advisor and acquaint you with the laboratory's mission. Your Air Force laboratory advisor is (Mentor).

NO RESPONSE BY MAY 4 1989 INDICATES YOUR INABILITY TO ACCEPT THE FELLOWSHIP

4401 Dayton-Xenia Rd. • Dayton, Ohio 45432-1894 • phone 513/426-6900 • FAX 513/429-5413
Cable : ENERGY • Telex: 288250

4. Fellowship requirements are as follows:

   a. The normal tenure of a graduate fellowship is 12 months ea fellowship year. This tenure ma, be reduced to no less than months with forfeiture of stipend for the remaining months of th fellowship year.

   b. Should you remain on tenure during the summer at an instituti having no formal summer session you must make arrangements wi the institution for supervised study or research toward yo advanced degree during that period.

   c. You may begin your tenure no later than the first academic te beginning after receipt of this notice of appointment. You mu enter on tenure no later than the beginning of the first academi term of your fellowship institution.

   d. Your fellowship support will continue for 24 months contingent upo 1) certification to UES by your fellowship institution tha satisfactory academic progress is being made toward a PhD in th area specified in paragraph #1 above; and 2) the availability o appropriated funds for such continued support.

   e. You are expected to continue uninterrupted study or research durin your fellowship tenure.

   f. Your fellowship institution must provide UES a statement o progress at the completion of each academic term, and also a copy of your dissertation upon completion of your tenure.

5. Congratulations on your acceptance to the fellowship program. Pleas call Ms. Judy Conover or the undersigned if you have any question pertaining to this appointment.

6. The Air Force Office of Scientific Research LGFP offers you the opportunity to spend 9 to 12 weeks during the summer at the (Sponsoring Air Force Lab). UES highly recommends this program to you and urge you to contact your Air Force laboratory mentor and UES about participation in this program. An information letter describing this program is enclosed.

NO RESPONSE BY MAY 4 1989 INDICATES YOUR INABILITY TO ACCEPT THE FELLOWSHIP

Please acknowledge acceptance and understanding of this appointment by signing and returning one copy of the acceptance page to this office no later than May 4, 1988. No response by this date will be considered a declination.

Sincerely,

UNIVERSAL ENERGY SYSTEMS, INC.

Rodney T. Darrah
Program Manager
Laboratory Graduate Fellowship Program

Enclosure

cc: Rod Darrah
Project 789 File
UES Contracts
Lt. Col. Cavender
Kathy Weatherall
Lab Mentor
Lab Chief Scientist
Lab Focal Point

2070:

ACCEPTANCE AND UNDERSTANDING OF THIS APPOINTMENT

I hereby acknowledge acceptance and understanding of this appointmen to the Graduate Fellowship Program:

_____
Signature Date

____ Interested in 1989 Summer Research

____ Not Interested in 1989 Summer Research

Exhibit A-6
University Information Letter

Date UES Project 789

University
Address

SUBJECT: Contract F49620-86-C-0127/SB5861-0436
Proposed Subcontract S-789-000-

Dear :

Universal Energy Systems, Inc. (UES) intends to issue a subcontract to the to cover a three-year fellowship for (Fellow) under the Laboratory Graduate Fellowship Program (LGFP) of the subject prime contract with the Air Force Office of Scientific Research (AFOSR). The tentative start date is the beginning of the quarter/semester.

The fellow will be paid stipends of $15,000.00 for the first year ($11,250.00 for the academic year and $3,750.00 for the summer if the fellow is enrolled in a supervised academic program). In addition, the fellow's department will receive $2,000.00 for each year of the fellowship.

UES requests that the following information be provided for the first year so that the subcontract may be accomplished.

a. A breakout of tuition and mandatory fees only for the first year for (Fellow) on a quarter/semester basis for the period beginning with the Fall 1989 quarter/semester. This does NOT include room and board.

b. Beginning and ending dates of each quarter/semester.

c. The name and telephone number of the fellow's academic/dissertation advisor. The fellow will be enrolled in the (University Department) department.

Please return this information to UES as soon as possible, but not later than 15 August 1989, so this subcontract can be accomplished in a timely manner.

The subcontract will include options for the second and third years. Information for optional years will be obtained prior to exercise of those options. Exercise of the options will be contingent upon continued funding from the Air Force and certification of satisfactory progress of the fellow by his/her academic advisor.

If you have any questions concerning this matter please contact the undersigned or Mr. Rodney C. Darrah, Program Manager.

Sincerely,

UNIVERSAL ENERGY SYSTEMS, INC.

Judyth L. Conover
Program Administrator
Laboratory Graduate Fellowship Program

xc: 789 File
Suspense File

Exhibit A-7
Subcontract Transmittal Letter
and Subcontract Form

---Date--------

UES Project 789

University
Address

SUBJECT: Contract No. F49620-86-C-0127/SB5861-0436
Subcontract No. S-789-000-

Dear :

Enclosed are the original and one copy of the subject subcontract agreement. The total price is $.

This Subcontract Agreement must be signed by an official of your organization who is authorized to bind in a legal contract.

Please sign and return the original agreement as soon as possible, but no later than 10 days after the date of this letter. This agreement will be signed by UES, and a copy of the fully executed document will be returned to you for your files.

If you have any contractual questions, please call the undersigned. For technical questions, please contact Mr. Rodney C. Darrah, Project Director.

Sincerely,

UNIVERSAL ENERGY SYSTEMS, INC.

Judyth L. Conover
Program Administrator

xc: 789 File
Suspense (Ltr Only)
Fellow

SUBCONTRACT AGREEMENT		Page 1 of 7
Subcontract No.: C-789-000-	Prime Contract No.: F49620-86-C-0127 SB5861-0436	Certified For National Defense Use Under DPAS (15 CFR 350). PRIORITY RATING: DO C-9

Issued by:	Subcontractor:
Universal Energy Systems, Inc. 4401 Dayton-Xenia Road Dayton, O 45432 Program Director: Rodney Darrah	

Contract Type: FIXED PRICE

Amount: $

OPTION I -
OPTION II -

Subcontract Effective Date:

Security Classification: U
Date of DD Form 254: N/A

TABLE OF CONTENTS

Subcontractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified in this subcontract agreement for the consideration stated.

SUBCONTRACTOR: _____

By: _____ Date Signed: _____
(Signature of Person Authorized to Sign)

Name & Title: _____

UNIVERSAL ENERGY SYSTEMS, INC.:

By: _____ Date Signed: _____
(Signature)

Name & Title: Rodney C. Darrah, Vice President
Universal Energy Systems, Inc.

SECTION A
CONTRACT FORM

1. This Subcontract Agreement is entered into as of the ____ day of __ _____, between Universal Energy Systems, Inc. (UES), an Ohio corporation with offices in Dayton, Ohio, (hereinafter referred to as UES) and (the University) ____ (hereinafter referred to as Subcontractor).

Whereas UES has entered into prime contract No. F4962-86-C-0127 with the United States Government pursuant to which UES is obligated to furnish Services and Related Personnel to conduct special studies involving U.S. Graduate Students pursuing Doctoral Degrees in Air Force Research Activities, and

Whereas UES desires to have Subcontractor perform a portion of the work and Subcontractor desires to assume the obligation to perform such portion of the work, subject to the terms, conditions, and provisions of this subcontract agreement:

Now therefore, in consideration of the foregoing and the covenants herein contained, the parties agree as set forth herein.

2. Work Location. Work will be performed at (the University) in support of the (Laboratory).

SECTION B
SUPPLIES, SERVICES, AND PRICES

1. The following services shall be provided:

Educational and research facilities, academic guidance and coursework in support of a Special Study in (Research). (Fellow) is assigned to the (Laboratory) at (Air Force Base). (Mentor) is the Laboratory Advisor. (Advisor), Department of _____, is the Academic/Dissertation Advisor.

2. For services rendered, as herein requested, UES will pay compensation as follows:

Fellow's Stipends:	$15,000	($11,250 Academic Year-$3,750 Summer Session)
Fellow's Tuition and Fees:	$	(First Year)
Fellow's Department:	$ 2,000	(First Year)
TOTAL	$ *	

3a. Option I - For second year services rendered as herein requested, UES will pay compensation as follows:

Fellow's Stipends:	$16,000	($12,000 Academic Year-$4,000 Summer Session)
Fellow's Tuition and Fees:	$	
Fellow's Department:	$ 2,000	
TOTAL	$ *	

b. Option II - For third year services rendered as herein requested, UES shall pay compensation as follows:

Fellow's Stipends:	$17,000	($12,750 Academic Year-$4,250 Summer Session)
Fellow's Tuition and Fees:	$	
Fellow's Department:	$ 2,000	
TOTAL	$ *	

SECTION C
DESCRIPTION/SPECIFICATIONS

1. The subcontractor, as an independent subcontractor and not as an agent of the contractor, shall perform research or services as set forth in the Fellow's letter, "Notification of Appointment to the USAF Laboratory Graduate Fellowship Program (LGFP)," dated _____, Attachment 1 hereto.

SECTION D
PACKAGING & MARKING

N/A

SECTION E
INSPECTION & ACCEPTANCE

N/A

SECTION F
DELIVERABLES AND PERFORMANCE PERIOD

1. Period of performance is from _____ through _____. This Subcontract Agreement shall terminate at 12:01 a.m. on _____ unless extended by written agreement. The first year of the fellowship tenure is to be completed on or before _____.

2. Deliverables are as follows:

   a. Statement of Progress: To be submitted by the Fellow's Academic Advisor through the Subcontractor at the completion of each academic term.

   b. Publications Prepared By the Fellow: Two (2) copies of any publications prepared by the Fellow to be submitted by the Fellow through the subcontractor.

   c. Dissertation: Complete copy of dissertation covering area of (Research) to be submitted by the Fellow through the Subcontractor.

   d. Transcripts: To be submitted by the Fellow through the Subcontractor at the completion of each academic term.

3. All deliverables shall be delivered to the Universal Energy Systems, Inc. (UES) office located at 4401 Dayton-Xenia Road, Dayton, Ohio, 45432, ATTN: Ms. Judy Conover.

SECTION G
ADMINISTRATIVE DATA

1. PAYMENT:

a. Initial payment for the period _____ through _____will be made by UES to the Subcontractor within 45 days after the date of UES's signature on page 1 of this Subcontract. This initial sum, specified in Section H, paragraph 9, includes tuition for ____ 19__, stipend for ____ 19__, and $2,000.00 for the Fellow's Department.

b. Payment for each subsequent semester will be made by UES to the Subcontractor within 45 days after execution of the modification to fund each semester. Payments will include tuition and stipend for that semester.

SECTION H
SPECIAL PROVISIONS

1. In the event Subcontractor should violate the terms of this subcontract agreement, UES, at its option, may terminate this subcontract agreement upon verbal notification to the subcontractor which will be confirmed in writing. UES shall be under no obligation except to pay Subcontractor such compensation as Subcontractor may be entitled to receive up to the time of such termination.

2. The Fellow is expected to complete all doctoral requirements within three (3) years from _____.

3. Tuition and fees set forth in Section B.2 above shall not include room and board.

4. The normal tenure of this fellowship is twelve (12) months each fellowship year. The twelve (12) month tenure may be reduced to no less than nine (9) months with forfeiture of stipend for the remaining three (3) months of the fellowship year. In the event this occurs this subcontract will be modified to decrease the stipend set forth in Section B.2 above.

5. The availability of funding for years two and three is contingent on a) certification to UES by the (University) that satisfactory academic progress toward a Ph.D in (Research) is being made by (Fellow), and b) the availability of appropriated Air Force funds for continued support. If this Fellowship is continued beyond the first year this Subcontract will be amended accordingly. If amended, the second year stipend will be $16,000 ($12,000 Academic year - $4,000 for summer session) and the third year stipend will be $17,000 ($12,750 Academic year - $4,250 summer session). Payment to Fellow's Department would remain unchanged for second and third year.

6. In the event the Government should desire significant changes which would affect price, delivery schedule, or terms and provisions in the overall project's work content or scope, this subcontract may be amended appropriately in acccrdance with Section H, Provision Number 14 of this agreement.

7. (FFP Contract)
The contract price is $_____.

8. OPTION PROVISION: UES is hereby granted the right to obtain the performance of the work described in Section B, SUPPLIES, SERVICES and PRICES. UES may require the subcontractor to perform Options at the fixed price set forth in Section B by issuing a unilateral subcontract modification to the subcontractor on or before (Date) for Option I and (Date) for Option II.

9. LIMITATION OF UES OBLIGATION: Of the total subcontract price, the sum of $_____ is presently available for payment and is allotted to this subcontract. It is anticipated that from time to time additional funds will be allotted to this subcontract until the total price of this subcontract is allotted. It is contemplated that the funds presently allotted to this subcontract will cover the work to be performed through (Date).

10. CHOICE OF LAW: Irrespective of the place of performance, this Subcontract will be construed and interpreted according to the federal common law of government contracts enunciated and applied by federal judicial bodies, boards of contract appeals, and quasi-judicial agencies of the federal government. To the extent that the federal common law of government contracts is not dispositive, the laws of the state from which this subcontract is issued shall apply.

11. DISPUTES: Either party may litigate any dispute arising under or relating to this Subcontract before any court of competent jurisdiction. Pending resolution of any such dispute by settlement or by final judgement, the parties shall proceed diligently with performance. Seller's performance shall be in accordance with Buyer's written instructions. Any references to disputes procedures in any Government clause incorporated by reference shall be deemed to be superseded by this clause.

12. ENTIRE CONTRACT: This Subcontract and any documents specifically incorporated herein constitute the entire agreement between the parties. This written agreement supersedes all other prior agreements, written or oral, between the parties related to the subject matter hereof unless specifically otherwise provided herein. The terms and obligations created hereby shall be changed only in writing as a modification to this agreement, duly executed by the parties hereto.

13. ACKNOWLEDGEMENT OF SPONSORSHIP

a. The Subcontractor agrees that in the release of information relating to this contract a copy will be provided to UES and such release shall include a statement to the effect that the project or effort depicted was or is sponsored by the agency set forth below.

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
BOLLING AFB DC

b. For the purpose of this clause, "information" includes but is not limited to, news releases, articles, manuscripts, brochures, advertisement, still and motion pictures, speeches, trade association meetings, symposia, etc.

14. AMENDMENTS: Amendments to this Subcontract may be negotiated between UES and Subcontractor. Such amendments must be in writing, and upon execution by both parties, will become a part of this Subcontract and will be subject to all other applicable terms and conditions of this subcontract agreement.

SECTION I
GENERAL PROVISIONS

1. Subcontractor agrees to perform the research or services in accordance with the attached list of Federal Acquisition Regulations (FAR) or Defense Acquisition Regulations (DAR) clauses, which are incorporated herein by reference with the same force and effect as though herein set forth in full. Except with respect to "Audit Negotiation" and "Examination of Records by Comptroller General," the attached list of clauses including Special Clauses in full text, shall be deemed to be modified as appropriate to substitute the word "UES" for "Government," "Contracting Officer," or "Buyer," substitute the word "Subcontractor" for "Contractor" or "Seller," and substitute the word "Subcontract" for "Contract", except in the term "Prime Contract."

DEFINITIONS: The following definitions apply unless otherwise specifically stated:

Buyer: The legal entity issuing this subcontract.

Seller: The legal entity which contracts with the Buyer.

Government: The Government of the United States.

Purchasing Representative: Buyer's authorized representative.

FAR: The Federal Acquisition Regulation, 48 CFR Ch.1.

Contracting Officer: The Government contracting officer(s) for the prime contract, or authorized representative.

FAR Paragraph No.	Clause Title	Date
52.212-8	Defense Priority and Allocation Requirements	May 1986
52.215-1	Examination of Records by Comptroller General	April 1984
52.215-2	Audit-Negotiation	April 1984
52.222-26	Equal Opportunity	April 1984
52.222-35	Affirmative Action for Special Disabled and Vietnam Era Veterans	April 1984
52.222-36	Affirmative Action of Handicapped Workers	April 1984
52.223-2	Clean Air and Water	April 1984
52.227-1	Authorization and Consent Alternate I (April 1984)	April 1984
52.227-2	Notice and Assistance Regarding Patent and Copyright Infringement	April 1984
52.227-11	Patent Rights - Retention by the Contractor (Short Form)	April 1984
52.243-1	Changes-Fixed Price	April 1984

SECTION J

DOCUMENTS, EXHIBITS & ATTACHMENTS

Attachment Number	Description	Date
1.	Notification Letter	
2.	Progress Certification	Undated

Certification Needed for Each Academic Term
CERTIFICATION OF ACADEMIC PROGRESS

Fellow: Semester/Academic Term:_____

University: Subcontract:

Fellow to complete

1. Courses - Give description of courses and grades received. (Attach sheet if extra space is needed.)

2. Give a description of research and progress toward dissertation. (Attach sheets if extra space is needed.)

3. Give brief statement of your involvement with the (NAME OF LAB) Laboratory and (MENTOR). Also list any items of interest such as academic awards, publications, other information that can be used for a LGFP newsletter.

"I certify that all information stated is correct and complete."

_____
Signature/Fellowship Recipient

_____
TYPED NAME/FELLOWSHIP RECIPIENT

CERTIFICATION OF ACADEMIC PROGRESS

"I certify that (FELLOW) is making satisfactory academic progress toward a Ph.D. in the area of (RESEARCH AREA) for the _____ 19__ academic term."

_____
Signature/Advising Professor

_____
TYPED NAME/TITLE OF ADVISING PROFESSOR

Exhibit A-8
Admendment Transmittal Letter
and Admendment Form

Date UES Project 789

University
Address

SUBJECT: Contract No. F49620-86-C-0127/SB5861-0436
Subcontract No. S-789-000-, Amendment No.

Enclosed are an original and one (1) copy of the subject amendment.

Please sign and return the original amendment within 10 days of the date of this letter. A copy of the completely executed amendment will be returned to you for your files.

If you have any questions, please call me.

UNIVERSAL ENERGY SYSTEMS, INC.

Judy Conover
Program Administrator
Laboratory Graduate Fellowship Program

Enclosure

xc: Suspense File (LTR ONLY)
Fellow

AMENDMENT OF SUBCONTRACT/ORDER

Subcontract No:	Order No: N/A	Prime Contract No:	Page 1 of
S-789-000-	Amendment No:	F49620-86-C-0127 SB5861-0436	Effective D-

Issued by:	Subcontractor:
UNIVERSAL ENERGY SYSTEMS, INC. 4401 DAYTON-XENIA ROAD DAYTON, OHIO 45432	

This Amendment is issued pursuant to Section H, Paragraph 8.

Description of Amendment: EXERCISE OF OPTION I AND INCREASE IN STIPEN

1. Section A, Contract Form is amended by inserting "$" after "Option The Total Amount is changed from $ to"$" to reflect the $ increase.

2. Section B, Supplies, Services, and Prices, is amended by chang paragraph 2a. to read as follows: "Option I - For second year servi rendered as herein requested, UES will pay compensation as follows:

Fellow's Stipends:	$16,000 ($12,000 Academic Year - $4000 Summer Session)
Fellow's Tuition and Fees:	$
Fellow's Department:	$ 2,000
Total	$

3. Section F, Deliverables and Performance Period, is amended by chang paragraph 1 to read as follows: "Period of performance is from (da through (date). This Subcontract Agreement shall terminate at 12:01 a on (date) unless extended by written agreement."

4. Section G, Administrative Data is amended by changing paragraph 1a read as follows:

   a. Initial payment for the period (date) through (date) will be m by UES to the Subcontractor within 45 days after the date of UE signature on page 2 of this Subcontract Amendment. This init sum, specified in Section H, paragraph 10, includes tuition for F 1989, stipend for Fall 1989, and $2,000.00 for the Fello Department.

AMENDMENT OF SUBCONTRACT/ORDER

Subcontract No:	Order No: N/A	Prime Contract No:	Page 2 of
S-789-000-	Amendment No:	F49620-86-C-0127 SB5861-0436	Effective Date

5. Section H, Special Provisions, paragraph 5. is amended to read: availability of funding.....and the second year stipend will $16,000 ($12,000 academic year - $4,000 summer session). Payment.

6. Section H, Special Provisions, paragraph 10, is amended by increasing amount allotted to the Subcontract by $ thereby making a revised or allotted of $ which covers the work to be performed through (date)

7. All other terms and conditions remain unchanged.

UNIVERSAL ENERGY SYSTEMS, INC.	
By:_____	By: _____
Date:_____	Date:_____
Rodney C. Darrah Vice President Scientific Services	_____ _____ _____
(Typed Name and Title of Person Authorized to Sign)	(Typed Name and Title of Person Authorized to Sign)

APPENDIX B

FELLOW QUESTIONNAIRE
AND
RESPONSES

Exhibit B-1
First Year Participants
Questionnaires and Responses

UNITED STATES AIR FORCE
LABORATORY GRADUATE FELLOWSHIP PROGRAM
EVALUATION QUESTIONNAIRE
(First Year Participants)

Name_____
University_____
Area of Research_____

1. How did you first hear of this program?_____

- From a friend.
- I was informed of the program by my research advisor.
- On a computer BBS.
- The fellowship bulletin was posted at my department.
- A university bulletin board. The posting was made by the UTA Bureau of Engineering Research.
- From information brochure posted on a bulletin board.
- Posting, Department Bulletin Board
- Via an advertisement in a science journal.
- While in the military on active duty stationed at HQ AFESC.
- I received information from people at AFATL, Eglin AFB.
- My advisor at USD brought it to my attention.
- A friend showed me that year's brochure.
- MIT faculty member.
- IEEE spectrum.
- A professor at school gave me the brochure.
- Word of mouth.
- On a university bulletin board where I took the GRE.
- My advisor showed me an ad in IEEE spectrum.
- Flyer on bulletin board.
- Received information through the psychology dept. Received information late, because it wasn't initially sent to behavior science programs.
- Through a friend.
- My advisor.

2. What aspect of the program was the most decisive in causing you to apply?_____

- Air Force sponsorship and opportunity to work at an AFB base, I'm a Reserve Second Lieutenant in the Air Force.

- Financial support for the remainder of my graduate career will allow me to pursue research interests that may have been closed to me due to financial considerations.
- The opportunity to gain funding independent of the University in order to pursue my research.
- Full support and stipend.
- The availability of significant funds to aid in completing graduate studies, and the existence of a lab with a research interest exactly paralleling my own interests.
- The opportunity for a source of stable support throughout my PhD dissertation.
- Support for PhD.
- The simple fact that it paid an adequate amount of money to live on plus tuition with no strings attached.
- Monetary funding.
- The fact that it is a full-time three year program.
- The opportunity to work at one of the labs during the summer, as well as the stipend level.
- The level of funding and the research opportunities at AFB's.
- The fact that acceptable degree topics include medical engineering in addition to traditional engineering disciplines.
- Financial support.
- The potential for research experience.
- Stipend.
- The stipend and full tuition.
- The prestige of receiving the fellowship.
- Financial support and a current graduate student could apply.
- Cognitive programs seemed general enough to fit my interests.
- Field of research financial support.
- It was through the Air Force.

3. Considering the time between applying and hearing that you were accepted, did this timetable cause you any problems?
   YES 1 NO 20 N/A 1

4. After your acceptance, was the information on the fellowship supplied to you prior to the start of the academic term?
   YES 21 NO 1 Comments: _____

   _____

   _____

- UES was very helpful in speedily processing my fellowship so it could commence summer term.
- Apparently, some info was misplaced and not sent to the contract and grants department until about 2 weeks after the start of the term.
- UES has handled the paperwork-end of things very well.
- I would have liked to receive more information concerning the pre-orientation visit.

- My original contract was for Carnegie-Mellon University, the change to Stanford was well handled, but it might have been nice to have received a modified award announcement to that effect.
- The UES staff was very helpful.
- Academic term doesn't begin until September.

5. Did you have difficulty in acquiring your fellowship through the University? YES 2 NO 13 N/A 7 Comments:_____

- The school (MIT) is still ironing out details. I'll write on the next questionnaire.
- N/A.
- I've had difficulty within the university setting up the fellowship: requesting proper amount of tuition and fees, and getting funds disbursed. However my academic advisor was able to straighten out these minor problems.
- At times, there seemed to be some confusion in the UTA office for special projects; however, there were no significant problems.
- At the time this questionnaire was filled out, I have not yet received the fellowship. However, summer research worked out well.
- N/A.
- I have not yet received the first installment and so cannot yet comment (I am not scheduled to receive it until September 1989).
- N/A.
- N/A.
- Since I accepted relatively late, I have not yet heard from Stanford regarding the fellowship.
- Not yet, but I haven't received my first check yet since it starts in September.
- Fellowship stated to start mid-September so haven't really had experience, yet.
- Because it is listed as a fellowship it caused problems with handling.

6. Did you have any difficulty with the administration of the program? If so, briefly describe the problems._____

- No.(8)
- UES has been very helpful; the few problems I have had were due to the university's bureaucracy.
- N/A.

- No, they have been very helpful in arranging a visit and summer research.
- N/A.
- None.
- Except for that mentioned in 4, no.
- Not yet.
- Everything is fine, except for the stipulation of 3 years to complete a Ph.D. which is not a very realistic expectation when starting from the B.S. level.
- Many times when I called UES with questions, I received automation which contradicted that information which I received earlier.
- Judy Conover was a truly helpful person.
- None.
- Received no information about orientation visit, had to call several times to get information.

7. How important is the expense paid pre orientation visit to the lab? Not worth expense 1 Convenient 2 Essential 6 N/A 13. Briefly describe your visit to the laboratory._____

_____

_____

- I'm planning to go in January.
- My pre-orientation visit is scheduled for 9/27/89. I will send another questionnaire after the visit.
- N/A.
- I have not visited the lab yet, but I anticipate that it will be beneficial.
- I was briefed on the work being done at the lab, and I had the opportunity to meet most of the personnel in the section with which I am to be associated. We each discussed our individual research efforts and how they might be related.
- Met with mentor and arranged possible summer research topics, met co-workers, arranged a place to stay (important) and acquainted myself with the area.
- N/A.
- I will be working full-time year round at the University of Washington and so did not take advantage of the lab visit offer.
- I believe it is important to be able to discuss the labs programs & direction in person. Even in my case having be stationed at the lab for two years, it was important because lab programs change constantly.
- Not essential to me, since I worked there the previous summer.
- Since I opted to work at the USAFSAM/VNB during this summer for 12 weeks, I did not take advantage of the pre-orientation visit. I have thoroughly enjoyed my summer experiences at this laboratory thus far.
- I haven't been there yet, nor have I met my mentor.
- N/A.

- Discussed future goals with advisor, familiarized with advisor's current research interests, provide opinions and suggestions.
- I received no expense paid pre-orientation visit to the laboratory.
- Didn't go.
- I have not yet visited the laboratory.
- I have not yet made the visit.
- Just drove myself, since Dayton is so close to Columbus.
- My orientation visit will be at the end of August.
- Discussed possible dissertation topics with advisor.
- Very good experience.

8. Did you participate in summer research at the laboratory?
YES 5 NO 17 . Briefly describe your research.

- Didn't find out until it was too late.
- This summer I investigated the use of Nesterov's Algorithm to solve smooth convex optimization problems. Now I plan to study the application of math programming techniques to machine learning.
- However, after having visited the lab, I look forward to the possibility of participating next year.
- Investigated the longitudinal mode spectrum of a semiconductor laser under the influence of optical feedback.
- As part of GRSP development of Laser Polarimeter, including set up and software development. Directly related to IR Spectropolarimetry.
- I developed and modified a surgical four-vessel occlusion model in the laboratory rat for the study of cumulative effects of repeated brief cerebral ischemia.
- Much of my summer was spent exploring the laboratory to which I was assigned. I wrote a technical report on channel modeling and evaluating protocol performance based on Markov channel modeling. Overall, I don't think my experience was very profitable.
- Not yet.
- Haven't had the opportunity yet.
- Research dealt with further characterizing a class of siloxane based cholesteric liquid crystals.

9. Briefly describe your laboratory mentor's involvement with you and your research. Have you experienced any problems with the laboratory involvement?

- No problems. My mentor has told me of some useful books to read and also areas to concentrate on.
- Having just begun the USAF Laboratory Graduate Fellowship Program, I have had limited interaction with my laboratory mentor.
- As this is my first year I have no basis to answer this question.
- I have been maintaining contact with Dr. Fowler via e-mail. I hope to further his involvement with my research after the visit to the lab.
- Dr. Banda described his recent work, and he allowed me to describe my own work. There have been no problems. I am looking forward to learning more about the work being done at the lab.
- My mentor has helped with arranging lab space, equipment and general needs. However, my research has been directed by co-workers (PhD's) and has been conducted mostly independently.
- N/A.
- I have only briefly discussed my plans with Dr. Chisholm. I anticipate further discussions in the future when my research plans begin to take on a more definition shape.
- My lab mentor's involvement to this point has been limited to my initial visit at the first of the summer. However, my fellowship only start in June 1989 so the time to interact has been minimal.
- Cooperation has been very good. We are working on essentially the same problem. His ideas aid me and vice versa.
- Dr. Paul Wercham was extremely helpful and encouraged me to think independently.
- N/A.
- Maj. LeClair is interested in increasing the efficiency of the design-manufacturing process. I am able to provide input in conceptual design from the Product Design standpoint.
- My mentor essentially served to introduce me to the facility. After that, I was pretty much on my own.
- My mentor is my previous (pre-grad-school) supervisor. No problems.
- N/A.
- I have not heard from my mentor yet.
- Simply informed him of my current research and future plans.
- Haven't had experience, yet.
- Have not started program yet.
- Mentor was helpful in working as liaison. He was also in explaining the Air Force's needs and how to relate my research to those needs.

10. Please furnish below any other comments or suggestions to improve the program in future years.

- I am honored that I was chosen to receive the fellowship. To this point, everything has gone smoothly. Thank you.
- I do not yet have any other comments or suggestions to offer.
- I can only speak to the summer research program; the success of just 3 months of research depends heavily on the quality of advisors available, especially for 1st or 2nd year students. I have had excellent direction this summer and am making good progress towards my PhD.
- Pay the recipients directly instead of subcontracting the task to the university. As it stands now, the University of Washington will not pay me at all for any work I do as a research assistant between Sept. and June because they deem the fellowship to be an adequate "salary."
- One area that could have used better information/communication is to describe the inter-relationship between the fellowship between the fellowship participant, the laboratory, and the university.
- An excellent program.
- I believe that graduate students who are a part of this program should be strongly urged to take advantage of the summer portion of the fellowship; I have found it to be a valuable experience and feel that I have narrowed down my interests (research). With this in mind, I will have less difficulty in choosing "specifics" when I develop my thesis in the future.
- I think the $2000 on account with the fellow's department should have a stipulation attached to it so that the fellow can apply that money to his research.
- Please note that my fellowship begins in September of this year and that questions 5,7 and 9 are not applicable at this time.
- Fellowship recipients are typically not given research assistantships at the same time, and end up without research facilities unless extra funds are available. It would be helpful to include a research budget in the package, esp. when the fellow is in a school such as Stanford, where living expenses can run extremely high.
- I think that more time has to be taken to design a specific complete research program with specific goals and expectations. This will help both the student and laboratory gain a compatible understanding of each other.
- At some schools, such as Stanford, it typically requires up to five years to complete a PhD in engineering. In such cases, it would be better if the fellowship were extended for a year or two as long as average or better progress towards the degree is being made.

- Have specific information about orientation visit.
- Very good program, so far, I am impressed and very happy that I was chosen as one of the participants.

Exhibit B-2
Second and Third Year Participants
Questionnaires and Responses

UNITED STATES AIR FORCE
LABORATORY GRADUATE FELLOWSHIP PROGRAM
EVALUATION QUESTIONNAIRE
(Second and Third Year Participants)

Name _____
University_____
Area of Research_____

1. Have you been able to get answers to all questions that have arisen during your fellowship? YES 41 NO_____ Comments:

_____
_____
_____

- There seem to be a lot of different people involved and I am not always sure who to contact about what, ie laboratory advisor, program manager, etc.
- The 800 number is helpful.
- The office staff has been very good in answering all questionsI had.
- I have always received satisfactory answers to my questions.
- Unfortunately, the phone number for UES is not toll-free.
- So far, contacting UES has been furnished in a straight forward fashion.
- Most questions are resolved with one phone call.
- Very good support by UES.
- The staff at UES has been very helpful at all times.
- Universal Energy Systems have done an excellent job of providing administrative support for this program.
- You have been most helpful.

2. Did you have difficulty in acquiring your stipend through the university? YES 11 NO 30

_____
_____
_____

- The university did not get the subcontract in time so my check (the first one) was late. By the second check they still hadn't received the subcontract, but somehow it worked out and the rest of my checks have been on time.
- Two of three stipend payments have been two-three weeks late. Processing of stipend apparently begins late as tuition bills indicate no credits (note, again this fall term's payment is late, 9-12-89 and no sign of it).
- Confusion at MIT because my research advisor and I are in different academic departments.
- This was caused by bureaucratic delays by MIT.

- The first year was somewhat rocky, but Brown was able to get the financial matters straightened up within a few months.
- I didn't receive any stipend for the fall semester until February. The spring stipend came in the end of May. The worst part was being threatened with academic withdrawal for non payment of my bill both semesters.
- I did not really have trouble with the stipend, but there was one semester when my tuition was not shown as waived on my registration bill. This was easily corrected when I showed my notice of appointment to the fellowship program to the appropriate administrative department.
- There were some difficulties in getting the paperwork done because this Fellowship is different from most that are handled at the university. Everything seems to be running smoothly now.
- My first check was delayed about a month due to paperwork that had to be done at Cornell. Since then, I have had no problems.
- However, there are occasional problems due to the nature of the fellowship; these, however, usually can be taken care of.
- The turn around was excellent.
- Only at this initial setup, 1st year.
- Once UES started sending copies of correspondence with the University to me, things have gone smoothly.
- Not this year.
- The funds were unavailable to me until about 5 weeks after the start of fall classes. Since then, there have been no problem.
- Several times there was a delay (of a few weeks) in getting the stipend; but there was no difficulty in getting it.
- I didn't receive any stipend for the fall semester until February. The spring stipend came in the end of May. The worst part was being threatened with academic withdrawal for no payment of my bill both semesters.

3. Did you have any difficulty with the administration of the program? If so, briefly describe the problems.

_____

_____

_____

- No. (12)
- None.(4)
- No problems.
- I have had no difficulty.
- The only problem was one that UES had no control over (it was my understanding). When renewal of the fellowship for the following year was under consideration, often I did not receive notification that the money was going to be given to UES until 1-2 weeks before the start of the fellowship. If for some reason the USAF could not have given UES the money for the USAF could not have given UES the money for my fellowship, I would have been unemployed for a semester, as assign for semester

assistantship are done about 2 months in advance. Fortunately, the money came through each time; but I guess UES has no say in that matter.

- No problems--However, I had forgotten about the required progress report at the end of my first term.
- Initially, my duties were somewhat unclear, but this problem was straightened out fairly quickly.
- Besides slow processing of funds discussed in #2, I have had no difficulties with the administration of the program.
- My only problem was with the progress report forms for each semester. They were in possession of someone at the school contracts office who understandably forgot he had to send them to me as the semesters passed. I think it would been easier if these forms had just been sent to me directly from the program in the first place.
- None so far.
- So far, any difficulty has been within the school, in allocating the stipend and additional funds.
- No, it was administered well.
- UES sends the tuition and stipend money after I register instead of before hand. This puts holds on my registration, and my department has to pick up the expense until the UES money arrives.
- The people in Contracts and Grants sometimes don't know how much money the fellowship provides.
- N/A.
- No problems other than the slight inconvenience mentioned above.
- No problems whatsoever. Everyone's been very helpful.
- No problems have arisen.
- No difficulty.
- No difficulties in the past.
- Besides slow processing of funds discussed in 2, I have had no difficulties with the administration of the program.
- After the start up, things have been smooth!

4. Have you participated in the expense paid pre-orientation visit to the laboratory? YES 29 NO 13 . Briefly describe your visit to the laboratory.

_____

_____

_____

- I thought it was a worthwhile trip. I got a good tour of the lab and a good idea of the research they are doing.
- A productive two day visit was taken 10/88. It eventually led to my summer research at Brooks in 1989.
- Yes, that was 2 years ago 1 September 1987. A more detailed description was given that year.
- I live only 15 miles from the laboratory and frequently visit for consultation.

- I spent one day at the Human Resources Lab in San Antonio, TX.
- I talked individually with the reporters in the Intelligent Systems division at the HRL in San Antonio and I presented some of the research I was doing in a group meeting.
- I visited during my first year of tenure for 2 days, and talked to many staff holding related interests.
- I did not participate as I had visited the lab already.
- Would like to visit laboratory sometime during this (second) year of my fellowship.
- I was introduced to the research conducted at the Air Force Laboratory.
- I worked at the laboratory for four years while I served in the Air Force.
- I first gave a brief presentation of the research I was doing at Brown; after that Dr. McManomon showed me around his facilities and we spoke about the course of study I was to be taking.
- I visited the Flight Dynamics Lab at Wright-Patterson Air Force Base in October 1987. The trip was helpful.
- I met my laboratory mentor, his research group, and a few other scientists at Wright-Patterson Air Force Base. I saw laboratories which were similar to that in which I work at school and was informed about some air force research projects which were related to any own research area. I very much enjoyed the visit and wish I could have had more time for it but my plane going to the base was unfortunately delayed.
- I visited WPAFB on my way to Boulder in August 1988. My mentor (then) was very informative and helpful; he gave me a thorough tour of the base. My mentor and building were later changed, but I had seen the new one.
- The visit served two purposes. It was educational since many of the questions I am researching were related to the research interests of my mentor. The trip also helped to establish a working relationship with my mentor.
- I met the people involved with research in my field and toured the facilities.
- Since I worked at the laboratory for five summers, under a different program, I am already well acquainted.
- During the course of the day at Tyndall AFB, I toured the engineering facilities and spoke with researchers. I gave a seminar on my research.
- Was very helpful; met with my laboratory advisor for two days and discussed the direction of the research program.
- I visited the Air Force Geophysics Laboratory in the Fall of 1988. While there, I participated in an experiments meeting on the topic of a sounding rocket launch for the 'Polar Arcs' experiment.
- Last year, 1/2 day introduction/interview.
- I soon will become a Ph.D. candidate, and now that I am sufficiently knowledgeable in my field I will be soon visiting the laboratory.

- The visit took place in the summer of 1987 and was described in the previous report.
- I spent 1.5 days with Dr. Roquemore and Dr. Jackson. I presented a seminar and tried to arrange for sometime to spent at the base.
- My advisor and I did not visit the Astronautics Laboratory and were shown all the research being undertaken there. We gave research talks and our expenses were paid for through seminar funds of the lab, however, not orientation funds.
- Described in previous questionnaire.
- I visited the laboratory (Frank J. Seiler Research Laboratory) March 5-8, 1989. I toured the laboratory and presented a seminar on my research to date in Human Factors Engineering.
- The lab is only about 20 miles from MIT. I'm out there quite often during the academic year so I didn't participate in a pre-orientation visit.
- Fall 1987 - I visited my mentor at Edward AFB. We discussed goals and methods of my research project. I was taken on a tour of the carbon research facilities.
- I visited Wright-Patterson in the first year of my fellowship. Research opportunities were discussed and plans for interfacing my interests/abilities with the MEG lab were made.
- I visited them last fall. I gave a short talk and toured the labs. I met with my liaison/mentor and her colleques, and we had numerous fruitful conversations.
- I visited the Flight Dynamics Lab at Wright-Patterson Air Force Base in October 1987. The trip was helpful.
- The visit was a good step to clarify my research program.

5. Did you participate in summer research at the laboratory?
YES 11 NO 30 . Briefly describe you research.

- Although I went to Brooks to work on some cardiovascular research, I ended up doing some perceptual research. Data which was promised did not appear so a new project had to be hurriedly developed.
- Transfer to technical knowledge and skill.
- Characterization of 3-5 compound semiconductor epilayers.
- I did not participate in research at the lab as I needed resources at the University of Florida to conduct my research.
- In the summer of 1988, I was a summer fellow at the Flight Dynamics Lab. It was a very interacting research experience.
- Designed and fabricated planar transmission line structures on GaAs. Losses were measured with these structures, and a newly introduced transition was tested. Clean room use and fabrication were learned.

- I developed an optimal interrupt trajectory algorithm which maximizes trial energy.
- Took summer class.
- I am making measurements of drop size and velocity in spray flames under a variety of external effects such as orientation and swirl.
- Independent study of computer-human interaction.
- I'm working on developing a computer code for simulating phenomenon observed around satellites in low earth orbit.
- I worked on a project to integrate anatomical and physiological (MRL & MEG) measures of the brain.
- But we have been exchanging papers and comments.
- In the summer of 1988, I was a summer fellow at the Flight Dynamics Lab. It w[illegible] a very interesting research experience.
- My experiment on High Temperature Fracture has been difficult. The lab workers though helpful, haven't been prepared as I requested.

6. Briefly describe you laboratory mentor's involvement with you and your research. Have you experienced any problems with the laboratory involvement?

_____

_____

_____

- The involvement has been minimal because I have not really begun research yet. My laboratory advisor has been very generous with offers of advice, resources, and research ideas. No problems at all.
- My mentor has been most helpful and we have worked well together. In fact, he went out of his way to develop a project for me on short notice when my planned project fell through. I was to work with one individual but upon my arrival, I found that the data promised to be available...was not available. We looked for alternate sources during my first few weeks but had no luck. Dr. Previc then offered to begin a short project for the remainder of my time there.
- No problems. Mentor has been helpful and encouraging.
- My laboratory mentor collaborates closely with me on one of the research projects I'm working.
- My mentor, Dr. Soref and I have conducted joint research projects since 1985 (3 years before my fellowship) and continue to do so. No problems.
- I have talked with him a few times about my research.
- The orientation visit was quite useful and we've maintained telephone and mail correspondence to some extent then through the exchange of ideas has been less than I had anticipated.
- My mentor changed last year. I met my new mentor, Mr. Dale Nelson, during his visit to CMU, and I described my thesis research and status to him at that time.

- My first mentor, Neal Urguhant, was very supportive and we discussed various aspe 3 of my research at regular intervals. My last mentor, Pat Coffield, was not as familiar with my work so we didn't converse as much. Dr. Sam Lambert, Chief Scientist at the Eglin AFB, was also my mentor during my GSSSP summer programs and during this fellowship.
- Did not have any involvement with Mr. Nichols during my first year. Spent the vast majority of my first year on course work and did not accomplish much in my research area other than topic determination.
- My mentor Dr. Chawla, has taken a concerned approach toward my research. He has offered valuable advice and suggestions each time we have spoken.
- I have frequent and useful discussions with my mentor. He has been supportive and sincerely concerned with my progress.
- We speak about every two months on the research I am doing; I also send him a report every semester and during the summer months on my research (a copy of which will be sent to you when it goes out this month).
- My mentor has been very helpful. He has informed me of the research topics of interest to the Air Force. He has also given me considerable amounts of career guidance.
- At the pre-orientation visit, we spoke about my research project but I did not hear from again until about two weeks ago, when he called my lab only to land that I was on vacation at the time. He is supposed to call back I believe when he returns from his vacation. I do not know what he wishes to discuss. I am unclear about what his role is supposed to be. Am I supposed to keep him up to date about my project or what? He is very interested in it, but neither of us had invited any correspondence for nearly a year. If it were not for the occurrence of some malfunctions in my lab, I would probably have had something I felt worthy of discussion and probably would have at least sent the results along for nim to look at.
- I have mainly been involved with coursework and have coordinated my research work with Dr. Das and Dr. Junkins I expect to get a lot of research done this coming year.
- He gave advice and suggestions. There is a need for a paper giving basic information to incoming microwave engineers who are not intimately familiar with processing; I have been asked to write one, since I have a good perspective.
- I have had personal contact with my mentor twice; the orientation visit and I recently made a second visit to give a seminar presenting my current research to his research group. I also send short monthly reports using electronic mail to keep Mr. Metzger informed of my progress. I believe the laboratory involvement has been an aid. It has provided a source of people interested in similar research areas and an opportunity for me to present my work.
- No problems.
- My laboratory mentor is currently planning a trip to Cornell to discuss my research.

- Dr. Cornette has shown interest in my research and progress towards a degree. He has also sought my opinion matters concerning computer modelling no problems experienced.
- My laboratory advisor has been very helpful in defining goals and directions of the research program; I speak with him often to discuss progress and problems of my research.
- My mentor (Dr. Cloutier) has been an excellent source of support and has challenged me tremendously. The lab involvement was very good.
- Dr. Carlson at AFGL has discussed with me my plans for thesis research and has offered experimental data from the Polar Arcs sounding rocket experiment. He has been very supportive of my research plan.
- Have change mentors haven't met new mentor, has advised on areas of research.
- Dr. Chimenti has provided me with articles and samples of materials necessary to conduct research.
- I have not really had significant interaction with the laboratory. I am aware of their work and they are somewhat aware of mine.
- I have met my laboratory mentor and talked with him a few times, but my research and that at the lab are along different paths, although they both deal with antimatter, so there hasn't been much involvement.
- My laboratory mentor jumped to the private sector. No problems with the lab.
- Dr. Repperges has been a member of my thesis committee. I have not experienced any problems with the laboratory involvement.
- Dr. John Wilkes visited our laboratory here at Ole Miss on May 19, 1989. We met and discussed the research I had been doing and future research projects. He also presented a short talk on the research that was going on at FJSRL.
- I have spoken with my mentor several times on the above regarding the potential opportunities for summer research at AAMRL. He was very helpful and I have not experienced any problems with the laboratory involvement.
- Communication by telephone once to twice yearly.
- My mentor is Mr. Charles Pike. Almost all of my contact, however, is with Dr. David Cooke at AFGL. His advice and suggestions have been invaluable.
- My new mentor, Dr. Wes Hoffman, has visited our facilities to discuss research and offered to help in analysis of fiber surface.
- No problems. Exchanged electrons mail with him several times. He invited me to participate in summer research at his laboratory, but I declined.
- I have had three different mentors. In each case they have offered any help I might need thus far I have not need their assistance. Capt. Heyse did set up a trip to hill AFB, Utah, to visit a vapor extraction site.

- Since my lab experience I have continued my association with my mentor through letters and phone calls concerning ongoing analysis of data collected during the summer.
- As above, we have exchanged papers, comments and electronic mail.
- My mentor has been very helpful. He has informed me of the research topics of interest to the Air Force. He has also given me considerable amounts of career guidance.
- G. Sendeckyj has answered all my questions. He delayed ordering my experimental materials which delayed by summer research.

7. Please furnish below any other comments or suggestions to improve the program in future years.

- I was surprised when I discovered I had to pay 13% social security tax and income tax on my summer wages because I am "an independent contractor." This should be made clear ahead of time or changed. I question whether participants in the summer program truly meet the IRS guidelines for independent contractors.
- I am very happy with the program thus far.
- Only as given in #3. Otherwise UES has done an excellent job.
- None as of now.
- A toll-free phone number for addressing questions and obtaining information would be useful.
- The program is a very good one; I have no complaints with it all.
- I understand the continuation in the program is subject to student performance and to program funding. I did not know until July it was allowed to continue in the program, which just seemed a little late to find out.
- None.
- The program is well managed and has been of great benefit to me and my research.
- It worked well.
- You may wish to advertise it more, as most undergraduates seem unaware of it.
- I would appreciate receiving copies of the correspondence between UES and my advisor and/or DRDA which have a direct impact on me.
- Great program, thanks.
- The lines on this form are too small to write in.

Exhibit B-3
Summer Research Participants
Questionnaires and Responses

1989 UNITED STATES AIR FORCE
LABORATORY GRADUATE FELLOWSHIP PROGRAM
SUMMER RESEARCH OPPORTUNITIES
EVALUATION QUESTIONNAIRE
(TO BE COMPLETED BY GRADUATE STUDENT PARTICIPANT
IN SUMMER RESEARCH AT THE AIR FORCE LABORATORY)

Name_____Title_____
Dept. (at home)_____Home Institution_____
Laboratory Mentor_____
Laboratory Address_____
Brief Title of Summer Research Topic_____

- Brian R. Bennett — Mr.
  Materials Science & Engineering — MIT
  Dr. Richard Soref — RADC/ESD, Hanscom AFB, MA
  Semiconductor Characterization

- Rodger J. Biasca — Doctoral Candidate
  Aeronautics & Astronautics — MIT
  Dr. David Cooke — Geophysics Lab, Hanscom AFB, MA
  Simulation of Low Frequency Plasmas

- David Bossert — Ph.D Candidate
  Applied Physics — Oregon Grad. Center
  David A. Depatie — WL/AROF, Kirtland AFB, NM
  Longitudinal Modes of a Semiconductor Laser with Feedback

- John G. Bruno — Bachelor of Science
  Microbiology/Immunology — University of Arizona
  Johnathan L. Kiel, DVM, Ph.D. — SAM/RZP, Brooks AFB, TX
  Luminal & DALM - Mediated CL in the HL-60 Model System

- Timothy Bunning — M.S.
  Chemical Engineering — University of Connecticut
  Dr. Robert Crane — WRDC/MLPJ, WPAFB, OH
  Polysiloxane Cholesteric Liquid Crystals

- Christopher D'Souza — Summer Fellow
  Aerospace Engineering — University of Texas/Austin
  Dr. Jim Cloutier — FXG/AFATL, Eglin AFB, FL
  Maximum Final Energy Intercept Trajectories

- Emily Dibble
  Psychology — University of Washington
  Sherrie P. Gott — AFHRL/MOMJ, Brooks AFB, TX
  Transfer of Knowledge and Skill in Avionics Troubleshooting

- Nancy Dietz — Predoctoral fellow
  Dept. of Physiology/Pharmacology — Univ. of South Dakota
  Dr. Paul Werchan — USAFSAM/VNB, Brooks AFB, San Antonio, TX
  Four-Vessel Occlusion Model in Laboratory Rats for the Study of Repeated Brief Cerebral Ischemia.

- Richard D. Hornung
  Mathematics — Duke University
  John B. Evanowsky, Ph.D. — Rome Air Development Center Griffis AFB, NY
  Modeling Network Links with Markov Models

- Thomas J. Mullen — Lab Grad Fellow
  EE/HST MEMP — Harvard - MIT
  Dr. Fred Previc — USAFSAM/VNB, Brooks AFB, San Antonio, TX
  An Investigation of the Time Course of Vection

- Todd Nichols — Ph.D. Grad. Student
  Electrical Engineering — University of Colorado
  Mr. Mark Calcatera — WRDC/ELMT, WPAFB, OH
  Loss Mechanics in Planar Conductors

- Gary A. Petersen, Jr. — 1st Year Grad. Student
  Physics — Univ. of New Mexico
  Major Raymond A. Motes — FJSRL/NH USAFA, CO
  Laser Ablation of Barium Titanate Thin Films

- James P. Seaba — Research Grad. Student
  Mechanical Engineering — University of Iowa
  Dr. W.M. Roquemore — WRDC/POSF
  Stability of Diffusion Flames

- Thomas A. Spencer — Graduate Student
  Nuclear Engineering — University of Michigan
  Dr. William Baker — Weapons Lab, Kirtland AFB, NM
  Vircator Computer Simulations/Data Acquisition Systems

- David A. Wagner — Ph.D. Candidate
  Mechanical Engineering — Stanford
  Dr. George P. Sendeckyj — WRDC/FIBEC Wright -Patterson AFB, OH
  Experimental Verification of Fracture Integral for Thermoninelasticity

A. TECHNICAL ASPECTS

1. Was the offer of research assignment within your field of competency and/or interest? YES 15 NO _____

2. Was the work challenging? YES 14 NO 1 . If no, what would have make it so? _____

- First, I feel the lab at which I was assigned needs a more focused idea of what they're trying to do. Second, the expectations from the student of both program and laboratory should be clear enought to define a solid summer research project. Then, the student and the lab have criterion upon which to base a project and achieve those golas. In short, it seemed too haphazard.
- See comments.

3. Were you relations with your Laboratory Mentor and research colleague satisfactory from a technical point of view? YES 14 NO 1 If no, why? _____

- Again, I got the impression that the laboratory had a cloudy vision of what they were trying to accomplish. It was difficult for me to try to come up with a worthwhile pursuit for the summer as a result.

4. Suggestions for improvement of relationship(s). _____

- None really, my interactions with Dr. Kiel were always pleasant, intellectually stimulating and very productive.
- There is little that UES can do to affect this relationship.
- Stressing to all involved researchers that research projects should be taken seriously and empty promises should not be made (See comments).
- None, relations very good.
- I had very good interaction Dr. Cloutier was a pleasure to work for.
- Make provisions for continuation of fellow's participation in USAF research beyond the brief summer research period. Something analogous to the Research Initiation Program would be useful.
- The goals of the summer research program need to be clearly defined and specific to the expected results of a summer research effort. Otherwise, neither the student, the lab, nor the program administrators gather a valuable idea of the possibility of future contact on a similar pursuit.

5. Considering the circumstances of a summer program, were you afforded adequate facilities and support? YES 14 NO 1. If no, what did you need and why was it not provided?_____

_____

_____

- The material I requested in January did not arrive until three after my summer program beginning due to procurement difficulties.

6. Considering the calendar "window" of eight to twelve weeks and being limited by varying college and university schedules, please comment on the program length. Did you accomplish: more than 4, less than 5, about what you expected 5?

- Wasn't sure what to expect. But, now, looking back on my experiences, I feel I should have done much more.

7. Were you asked to present seminars on your work and/or your basic expertise? YES 5 NO 10. Please list number, dates, approximate attendance, length of seminars, title of presentations (use reverse side if necessary).

- If I come back next summer, Dr. Werchan would like me to present a seminar.
- (1) August 11, 1989; roughly 25 people; length approximately 40 minutes; title: Vircation Simulations using MAGIC.
- I did volunteer a 1 hour seminar, 25 people.
- Presently being scheduled.
- 18 July 1989, Basic Job Skills Progress Review, Attendance 25-30, 90 minutes. "An Investigation of Transfer of Technical Knowledge and Skill: Implications for Job Family Tutor Design.
- 7/6/89 - Image Processing, 30 persons, 1 hr.
  7/14/89 - Summer (CL) Progress, 5 people, 20 min.

8. Were you asked to participate in regular meetings in our laboratory? YES 11 NO 4. If yes, approximately how often?_____

_____

_____

- Once every two weeks for about one hour.
- Twice a week.
- Every two weeks.
- Every two weeks.
- I met with my colleagues on a daily basis.
- Weekly.
- Twice a week
- Every two weeks
- Every two weeks

9. Other comments concerning any "extra" activities.

- Attended UES seminars and a number of research conferences with colleagues at Brooks.
- Travel to Eglin AFB, for pilot testing of experimental procedures and experimental materials; data collection.
- Safety and security seminars conducted; also clean room clean-up detail.
- The UES luncheonwas highly informative and Dr. Burton's "Brown Bag" lunches provided an excellent environment for exchange of scientific ideas.

10. On a scale of A to D, how would you rate this program? (A high, D low)

Technically challenging	A-11	B-2	C-2	D-
Future research opportunity	A-12	B-	C-2	D-1
Professional association	A-11	B-3	C-1	D-
Enhancement of my academic qualifications	A-6	B-8	C-2	D-
Enhancement of my research qualifications	A-10	B-4	C-2	D-
Overall value	A-12	B-1	C-2	D-

B. ADMINISTRATIVE ASPECTS

1. What aspect of the program was the most decisive in causing you to apply?

- My desire to do some experiments for my research.
- Freedom of research topics, pay.
- The opportunity to make new contacts and learn new techniques.
- Opportunity to see how research is conducted at Brooks. A new research environment as compared to academic research.
- The opportunity to get a broaden knowledge base at an outside lab.
- The facilities available, and the expertise present at the facilities.
- It was through the Air Force.
- Experimental facilities available.
- Opportunity to work w/new people in a different lab and make contacts w/other researchers.
- It looked like a good opportunity to broaden my interest in this field and to share some results obtained.
- The prospect of working with Dr. Gott.

- Provision for obtaining a Ph.D. through technical and financial support.
- The opportunity to work with new instrumentation and biochemical aspects of the cell line I have been using.
- I felt it was a good opportunity to see what a military research enviroment was like. Also, the stipend was satisfactory to make driving all the way to my summer location worthwhile.
- In my field - what I wanted to do as far as future career.

2. How do you rate the stipend level? Meager 1 Adequate 9 Generous 5 .

3. Please give information on housing: Did you reside in VOQ 1 , apartment 10 , other (specify) 4 ? Name and address of apartment complex and manager's name.

_____

_____

- Treeborn Apartments, 450 E. Dayton-Yellow Springs. A bit expensive but convenient and pleasant.
- I stayed in the same apartment as during the academic year.
- The Park at Presa, 2233 SE Military Dr., San Antonio, TX.
- Silver Fox Apartments, 11845 West Ave., San Antonio, TX. Manager: at McEnnis
- Lake & Racquet Apartments, 5600 Gibson Blvd. S.E., Albuquerque, NM.
- Friend of a friend - Dobin Denny, 1341 4th St., Dayton, OH.
- House.
- Related from MIT, 71 Fulkerson St., Cambridge, MA.
- Private rental house w/two roommates.
- Mariposa Apartments, San Antonio, TX. Manager: Ms. Lorene Case
- Amhurst Apartments on Harshman Road in Dayton, OH.
- Lived at a friends house.
- Falcone Apartments, 118 W. Embargo St., Rome, NY 13440 Nazie Falcone, Manager
- Grove Park Apts., 2566 Goliad Rd. #403, San Antonio, TX 78223

4. Would you encourage or discourage expansion of the Summer Research Program?_____Why?_____

- Discourage - The lab staff seems unable to produce much quality work in the limited time of 12 weeks.
- Encourage - The research association with Air Force personnel is worthwhile.
- Encourage - It is an invaluable experience for a graduate student interested in research.
- Discourage - It seems that administrating the program as is a significant workload so expansion might cause problems.

- Encourage - Great opportunity for students to learn its like in the 'real world', as opposed to a University setting.
- Encourage - It provides great opportunity for researchers.
- Encourage - It was a very worthwhile experience.
- See No. 8.
- Encourage - It was a good experience for me; although I'm not sure what would be expanded.
- Encourage - It affords both the lab and the researcher opportunities for broadening of horizons.
- I encourage expansion - The opportunity to do applied research complements the emphasis on basic research in Universities. This was a good orientation to the priorities of the USAF and to the way the Air Force functions.
- Encourage - Good program with much opportunity, return on investment is high.
- Encourage - It is an extraordinary opportunity for any scientist to expand his experience while doing pertinent research.
- Discourage- I feel more energy should be directed toward making a coherent, intensive program with benefits for the student and research facility. Then, after this is accomplished, expansion should be considered.
- Encourage - Excellent opportunity

5. Considering the many-faceted aspects of administration of a program of this magnitude, how do you rate the overall conduct of this program?Poor____ Fair__2___ Good__8___ Excellent__5___. Please add any additional comments._____

_____

_____

- Your administration was fine. I would have enjoyed more social opportunities to meet summer student.
- I like the minimal amount of paperwork required.
- Delays in early payments were difficult to handle early in the summer and resulted in excess finance charge payments on bills, etc.
- Everyone at UES has been extremely helpful.
- Streamline the processing of stipend invoices - even when invoices are submitted just before a closing date, there is a minimum wait of nearly 4 weeks for a check. This is too long.
- CU - Boulder has presented a few problems, UES has been great.
- Communication between administration, student, and laboratory was not very effective. If desired, I will discuss the details of this later to those interested.

6. Please comment on what, in your opinion, are:

   a. Strong points of the program:_____

_____

- For researchers, it provides a great experience to view the AF labs and workings.
- Research association with AF personnel, pay, freedom of research topics.
- Learning of new techniques, establishing contacts.
- Bringing good students & faculty together to do good research.
- Opportunity to work w/others in a 'real world' lab facility. Great for broadening one knowledge and getting viewpoints of several different people.
- Well organized and implemented little time wasted, and great research output by an individuals associated with this program.
- The opportunity to interact at the Summer lab. This was very worthwhile.
- Interaction with scientists in my field; use of state-of-the-art equipment.
- A good environment for research.
- The opportunity to work with an exceptional scientist and be part of her research group. The opportunity to participate in ongoing projects.
- All of them.
- The program has strong potential. It could be a great opportunity for promising young academicians to meet and work with Air Force laboratory researchers.
- Interaction of scientists and technical equipment made available to fellows by USAF.
- Adequate research in field of interest.

b. Weak points of the program:_____

_____

_____

- The support at the lab is thin. The staff seems overcommitted and summers students naturally are low priority.
- Lack of assurance of promised research opportunities. Students are entering a very unknown situation. They miss summer course & research opportunities to "risk" a fulfilling experience at Brooks. When this risk backfires, it is quite disappointing.
- Mentor & research associate were not always available to answer questions (away on trips for conferences, etc.)
- Not enough time.
- Students are "Self-employed contractor" would prefer to be a summer-hire govt. employee (at some salary) would allow benefits such as travel to conferences, library literature searches, etc.
- The short time available to work in an AF lab isn't conducive to tackling too large of a problem. Could limit interest for some students.
- The final report format pre-supposes that I worked on a tiny research project, from start to finish. I actually worked on parts of a large, long-term project. The report should be

revised to reflect differences between LFGP and Summer Faculty research activities. See also No. 5 above.

- Haven't found any yet, except for my university.
- Government red tape causes undesirable delays in research.
- I felt that more time needed to be spent defining a strong research program. Where students gain valuable experence and learn about the research environment in which they are placed. If education is a major goal of this program than I think it is insufficient in this respect.
- The billing and mailing of felllows money by UES is slow and tedious.

7. On balance, do you feel this has been a fruitful, worthwhile, constructive experience? YES 15 NO_____.

   - Definitely.

8. Other remarks:_____

   - I must return to the lab in October to complete the research we did not finish in the summer.
   - I went to Brooks to work w/Dr. Larry Krock on cardiovascular data. The promised data was never provided and Dr. Previc and I had to come up with a short 5 week project to "fill" the rest of my summer. While it was an interesting project and I enjoyed working on it, it was not what I really hoped to be or planned to be doing. I did learn much about research at Brooks and the research environment. However, what I learned has led me to believe that such an environment may not be one I'd like to work in. Thus, it was educational but I cannot help but wonder if I could have more productively used my summer at school working on my own research. Perhaps, a better experience may be planned for next summer although I'm hesitant to take the 'Risk'. I should note that Dr. Previc was infinitely helpful and I very much enjoyed working with him. Also, perhaps Dr. Krock, not being my official mentor, did not recognize his responsibility or my dependence on him for a good research.
   - I was slightly disappointed in the why payments for services was handled (billing every two weeks). In one instance, I received two payments after being told I was late sending my Bill for Service. But I sent this bill on the Friday before it was due (the following Thursday, July, yet they say they didn't get it till Friday. The following bill I sent in I sent the Friday before (due the following Friday, Oct. 21) I was told it was received by Tuesday, 2 till 3 days sooner than the previous (late) bill. Cannot figure out the reason (even

including July 4th holiday). This lateness left me 'broke' for essentially 4 weeks. Surely a better way can be used for the payments.

- My experience with the summer program was very good. My situation however, is probably not typical. I worked full-time at RADC from 1984 to 1988, and hence know my way around. Also, I live within distance of RADC and MIT, allowing year round collaboration.
- I did well in encountering research associates at the WL/AROF who were very helpful and interested in getting me involved in a project and advising me on my dissertation topic and the research I was doing. If this hadn't been the case, the summer wouldn't have turned out as well as it did. Also, the issue of a security clearance came up and was a hinderance to the amount of lab time, access to areas, etc. I would suggest this be addressed in the next year since most of what AF labs do is secret.
- Lisa Beljan (of UES) was very helpful: She provided accurate information in an efficient manner. She expedited the provision of air tickets and a travel advance. She was consistently competent and well informed. Dr. Gotts enthusiasm for my participation in this program contributed to the quality of my experience at AFHRL. I look forward to continuing our collaboration on this project.
- Thank you.
- This is an extremely great program and learning opportunity, plus it has given me a head start on my way to getting my Ph.D.
- It was valuable tome in that I learned some of the strengths and weaknesses of the research facility at which I worked. This wasn't a direct result of the program, but, rather a matter of observing how things operated, and worked or didn't work, as I feel they should have. Much of the time, I felt I was attemping to amuse myself instead of learning or helping the (vague) pursuits of the laboratory.

APPENDIX C

LABORATORY QUESTIONNAIRE
AND
RESPONSES

Exhibit C-1
Focal Point
Questionnaires and Responses

LABORATORY GRADUATE FELLOWSHIP PROGRAM
EVALUATION QUESTIONNAIRE
(TO BE COMPLETED BY LABORATORY FOCAL POINT)

An essential part of the success of the USAF-LGFP is the laboratory mentor's interaction with the Graduate Fellow. Please provide information on the methods employed by the laboratory to accomplish this interaction.

Laboratory/Center_____
Name_____

- Aero Propulsion and Power Laboratory - Robert L. Kerr
- Armament Laboratory - Dennis Goldstein
- Armstrong Aerospace Medical Research Laboratory - Elona Beans
- Avionics Laboratory - Leslie J. Lawrence
- Flight Dynamics Laboratory - Adolph Harris
- Frank J. Seiler Research Laboratory- Kenneth M. Dieter
- Geophysics Laboratory - A.S. Jursa
- Human Resources Laboratory - William E. Alley
- Materials Laboratory - Sue Kirchoff
- Rome Air Development Center - Fred Diamond
- School of Aerospace Medicine - Russell R. Burton
- Weapons Laboratory - Richard Keppler

1. How do you rate the correspondence, verbal and telephone communication and other aspects concerning program administration? Excellent 3 Good 8 Average___ Poor 1
How could it be improved?
_____
_____

   - On occasion HSD circumvents this office and goes directly to the mentor, student, etc. Would appreciate all correspondence copies come directly to this office.

2. The fellowship selection process is two-fold: academic and research area. Did you have sufficient time to conduct an evaluation of applications? YES 10 NO 1 N/A 1
Comments: _____
_____
_____

- Between MLK and each division, we always seem hurried to evaluate and prioritize applicants.

3. Please rate the expense paid orientation visit:Essential 8 Convenient_1__ Not worth the expense___ N/A_3_

- Very useful/desirable.
- Do not have data specifically.

4. Did the laboratory/center conduct a general briefing, tour, and/or other formal means of welcome and introduction for the fellow assigned to your organization? YES_8__ NO_3_ N/A_1_

- In case of two fellows.
- We will.
- In some cases.
- Not that I knew.

5. Describe the mentors involvement with the fellow. Do you feel there is sufficient involvement between fellow and mentor? If not, what can be done to improve the involvement?

_____

_____

_____

- Fellows should have to work at sponsoring laboratory at least one quarter during the year.
- "Average" to "Good"; Don't know how to improve the situation. Dependent on "Quality" of mentor and availability of time -- needs work.
- Good involvement - fellows have spent time working at our lab. Involvement has been sufficient.
- There is very good involvement with 2 of the fellows and now that Mr. Ellsworth has been transferred to Dr. Roquemore, I expect that relationship to improve.
- Interaction is appropriate. It's important to select a fellow with matching interests.
- Mentors keep in touch through phone conversations and in some cases through personal contact. All mentors are aware of fellow's research and progress.
- Since little is required of the fellow, his involvement is minimal. I have encouraged mentors to visit the fellow and the mentor at his university.

- Require the fellows to work at laboratory (SAM) every summer for 10-12 weeks.
- The amount of involvement varies with the individual fellow and mentor. In most cases, the involvement is all that can be expected from a full time student. Mentors can be encouraged to use the relationship as an opportunity to establish communications with the students advisor and development where this may be advantageous to the Air Force.
- The fellow works in an area of interest to me. Our technical contact is fairly regular.
- Not presently, but most of the students are completing their course work. Improved involvement would be controlled by mentor and student. Also, I've heard that some school advisors suggest their students not contact their AF mentors. There should be support from the school as well for involvement with AF.

6. Did the fellows assigned to your laboratory take part in the summer research program? YES 4 NO 6 N/A 2
Comments_____

- Not that I know of. This would help if they did participate.
- One did. Others did not.
- Exception - Mr. Taft
- Not all this year, but one last year and one this year.
- One fellow took part in the summer program this year and it is anticipated that others will be involved next year.
- Don't know yet.
- Fellows should be pressured to spend some time in the labs.
- Once a fellow is well into his research program, it is unlikely that he will participate in the summer research program. It should be required for all new fellows. The orientation would be included.
- 3 did and 2 did not.
- They were involved with academic pursuits.
- The fellow's class schedule required his presence on campus. He took part in the summer research program last summer, before he obtained the fellowship.

7. Please furnish any recommendations you may have on improving the LFGP.

- Fellows should be required to work in sponsoring laboratory at least part of the year.
- None.
- Develop a questionnaire applicable to Lab Representatives dealing more w/the administration/mgt of the program.
- Good program.
- Fellows should be required to participate in the Graduate Student Research Program for at least one summer.
- Fine as is. Ensure a good match of applicant to lab.
- Appears to be going well.
- Require summer participation at group labs.
- I have none.
- Could be expanded to 4 per lab.
- Get college as well as AF support for program.

8. Please furnish any other comments or suggestions to improve the program in future years.

- None.
- Work closer with the Lab Representative. Since AAMRL's Chief Scientist is located in Texas, too often suspense are not met. Correspondences and request sent to Texas cause a remail of the information back to Ohio creating a tremendous loss of time. Also, working through the Lab Representative (instead of directly with the research sponsors) reduces the number of contact points and establishes better internal controls for AAMRL.
- The advisors of the fellows should be sent a letter inviting then to participate in the SFRP along with the fellow.
- Make the mentor a member of the graduate committee at the university.

Exhibit C-2
Mentor
Questionnaires and Responses

LABORATORY GRADUATE FELLOWSHIP PROGRAM
EVALUATION QUESTIONNAIRE
(TO BE COMPLETED BY LABORATORY MENTOR)

An essential part of the success of the USAF-LGFP is the laboratory mentor's interaction with the Graduate Fellow. Please provide information on the methods employed by the laboratory to accomplish this interaction.

Laboratory/Center:_____
Mentor:_____Fellow:_____

•	Aero Propulsion & Power Lab	
	Dr. W.M. Roquemore	Mr. Vincent G. McDonell
	Dr. W.M. Roquemore	Mr. David Ben Ellsworth
	Dr. W.M. Roquemore	Mr. James P. Seaba
	A.J. Wennerstrom	Mr. Charles Gendrich
•	Armament Lab	
	Jim Cloutier	Mr. Chris D'Souza
•	Armstromg Aerospace Medical Research	
	Dr. Rik Warren	Mr. John Larish
	M. Viramnis	Mr. Elena Plante
	Capt. Ron Julian	Mr. Mike Branicky
	Lt. Col. Marshak	Ms. Carol Novak
	Daniel W. Repperger	Mr. Richard Volpe
•	Astronautics	
	Alok Das	Mr. Raymond A. Mills
•	Avionics	
	Dr. Paul McManamon	Mr. Charles Adler
	Lt. Col. Soda	Mr. Richter
	Mr. Mark Calcatera	Mr. Todd Nichols
•	Engineering & Services Center	
	Dr. Cornette	Mr. Laurence Bentley
	Dr. Cornette	Mr. John Gierke
	Mr. David Cooke	Mr. Rodger Biasca
•	Flight Dynamics	
	Major A. Janiszewski	Mr. Steve Gortsema
	Dr. G. P. Sendeckyj	Mr. David Wagner
	Dr. Siva S. Banda	Mr. Klifton Black
	Mr. K. Stetson	Mr. D. Bower
	Mr. J. Cloutier	Mr. C. D'Souza
•	Frank J. Seiler Research	
	John Wilkes	Ms. Sandra Strubinger
	Raymond A. Motes	Mr. Gary Petersen

• Geophysics	
D. E. Bedo	Mr Kang Kwon
D. A. Chisholm	Mr. Randy Brown
James	Mr. Kurt Fiegl
John Cipar	Ms. Lind Gee
• Human Resources	
Lt. Burns	Mr. Craig Knoblock
Dr. Sherrie Gott	Ms. Emily Dibble
Valeria Shute	Mr. Frank Ritter
Kyllonen	Ms. Holly Taylor
• Materials Laboratory	
R.L. Crane	Mr. Timothy Bunning
Maj. Steve LeClair	Mr. Jack Hong
Dale Chimenti	Mr. Dmitri Chizhik
• Rome Air Development Center	
Dr. John Evanowsky	Mr. Richard Hornung
Warren Debany	Ms. Joan Carletta
Richard Soref	Mr. Brian Bennett
Dr. W. Senus	Mr. M. Richard
• School of Aerospace Medicine	
Dr. Paul Wercham	Ms. Nancy Deitz
Fred Previc	Mr. Tom Mullen
Johnathan L. Kiel	Mr. John Bruno
• Weapons	
Dr. David DePatie	Mr. David Bossert
Dr. Kirk Hackett	Mr. Thomas Spencer
Capt. Ed Carmona	Mr. David Taft
William L. Baker	Mr. Thomas Spencer
Capt. Ed Carmona	Mr. David Taff

1. How do you rate the correspondence, verbal and telephone communication and other aspects concerning program administration?
Excellent 15 Good 18 Average 9 Poor 3 N/A 3
How could it be improved?_____

- No problems; UES is fully responsive.
- Mr. McDonnell has given a seminar at APPL in wh presented the results of his thesis work and his p for future work.
- I have talked with Mr. Ellsworth on the telephone about this thesis research which appears to be going well.

- Mr. Seaba has given a seminar at APPL on his research as well as spent the summer collecting data for his thesis at APPL.
- Neither parties have initiated routine communication.
- Give me a set of ground rules at the beginning. No one said what my job is as mentor.
- More timely information, sooner, would be helpful.
- Add the requirement for a quarterly report an progress, difficulties and achievements.
- Some kind of formal interchange must be established.
- I need more familiarity with program before I can comment.
- For example, this questionnaire seems inappropriate for someone who has been in the program several years. Some of the questionnaire should be for new initiates only.
- Require annual review of progress in a mutually agreeable location.
- I don't know what program administration means?
- I did not heat about Kurt's appointment from UES - but from Kurt. The UES letter arrived 1 week later. It was embarrassing not to known he was appointed.

2. The fellowship selection process is two-fold: academic and research area. Did you have sufficient time to conduct an evaluation of applications? YES 21 NO 20 N/A 7
Comments:

- Done at Chief Scientist Office, and seemed adequate.
- N/A. New mentor. Not involved in the evaluation process.
- N/A. Evaluation performed by laboratory chief scientist Dr. Fred Diamond.
- The time available was sufficient, however it was during a week which happened to be during a break for many Universities. This made contacting the students and their faculty advisors difficult.
- I did not understand the question.
- Need to be informed when applications will become available for evaluation so we can set aside time to perform them.
- Only because our internal mail system was working and I was not traveling or on vacation.
- I was selected to be Tom's mentor after he had already been approved (at least as far as I can recollect).

- But I only had one. He was a very good match - however.
- I attended his preliminary exam for his thesis at Carnegie Mellon University.
- I did not evaluate applicants on this program.

3. Please rate the expense paid orientation visit:
Essential 25 Convenient 11 Not worth the expense__ N/A 12

- Ray has not visited the laboratory yet. I would like to arrange for him to visit AL as soon as possible.
- N/A - no visit needed.
- N/A.(4)
- N/A, he is local.
- Hasn't happened.
- Not accomplished yet.
- N/A, in town.
- Kurt did not formally visit - as he has been here before.
- The student did not visit the base.
- I did not meet the fellow on that visit.

4. Did the laboratory/center conduct a general briefing, tour, and/or other formal means of welcome and introduction for the fellow assigned to your organization? YES 30 NO 9 N/A 9

- N/A.(4)
- I don't know.

5. Describe your involvement with the fellow. Do you feel there is sufficient involvement between you and the fellow? If not, what can be done to improve the involvement?

- We shared office space and his experimental work was of high interest to me. The other duties of the mentor are probably only impediment to increased interactions.
- We interacted frequently on research conducted by fellow. In this case involvement was very satisfactory over the summer program. Interaction is somewhat infrequent with fellow at Univ. of Michigan.

- Not sufficient the fellow doesn't feel there is much need to get involved with the laboratory. He's busy enough.
- Comparable to full-time staff. Yes.
- Fellow spent summer of 88 in my lab; we have frequent phone contact -I arranged to have him attend a special AFOSR Review at the Air Force Academy and will so arrange attendance at another AFOSR cognitive review - this fall in Washington, DC.
- Minimal involvement - appears adequate.
- There is sufficient involvement with the Fellow. I assisted in selecting a thesis topic and was involved in discussions of the experimental results.
- There needs to be more involvement with Mr. Ellsworth. He will be invited to visit APPL and give a seminar on his thesis work.
- There is sufficient involvement with the Fellow. I assisted in selecting a thesis topic and planning of the experiments for this thesis. Also I have been involved in discussions of the experimental results.
- I believe that the orientation visit and the summer research program provide adequate opportunities for contacts between the mentor and graduate fellow.
- We've had numerous telecons in addition to his one day orientation visit. He stayed at my house while here.
- Short quarterly progress reports (informal is ok) would improve our relationship.
- Joan and I maintain contact by netmail. I am award of her current work and academic progress.
- She visited here once, I visited her once. Had intense discussions of research both times.
- Yes, unlike the one-time summer appointment this association will be scientifically rewarding to both institutions.
- I reviewed Tom's progress, gave him general directions and arranged for him to work several of my research scientist this summer - in particular Dr. Kirt Hackett. My official travel scheduled prevented me having as frequent interaction as I had expected.
- The orientation visit was the key involvement. Since then we have talked on the phone and we have corresponded.
- We discussed the thesis topic and jointly planned the experimental test program. The involvement was sufficient.
- Yes, I took pains to see that we had frequent interactions. Several of these will result in papers.

- Involvement has been quite extensiv and taken the form of scientific collaboration on th conceptualization, experimental design and piloting of cognitive tasks for a study to investigate transfer of technical problem solving skills.
- Excellent involvement. Far and away sufficient.
- My involvement has just started with Mr. Black.
- Good, productive involvement.
- Require semi-annual of annual visit of fellow to lab and/or lab rap to fellows institution.
- I've spoke with him once.
- I speak with him annually during the academic certification process.
- Informal discussions. Yes. He will present a 1-hour seminar in August.
- Sufficient involvement for now. More involvement (research) in future anticipated.
- Limited to one phone conversation to date. Ok at this point.
- In the past year - one visit to WRDC - we both attended two technical meetings and had several discussions - have had several phone calls. Involvement considered adequate.
- Ms. Novak has made no known attempt to contact either the lab or myself!
- Daily contact this summer. Anticipate weekly or monthly contact during school period.
- Then is adequate involvement.
- I am currently establishing that - I will have more experience in a year suggest improvements.
- To be determined at this point. Fellow has a complex summer schedule which has limited our interaction to exchanges of letters. I will be in a better position to make a judgement in a few months time.
- The fellow is working on a research project that complements that of the mentor; we are exploring new ways to increase our collaboration.
- Not sufficient incentives for visits and attendance to summer faculty program. Perhaps incentives that they submitted any papers, reports etc. to mentors.
- In sufficient involvement. See 1 above.
- Very good - no improvement needed.
- Yes.
- Yes.
- We have written communication twice a year, perhaps one phone call each year. Also at conferences we meet and discuss the research.

- We have discussed her work at length on renewal occasions. She routinely sends me reprints of her papers.
- The involvement was to help formulate a research topic and to provide the information and facilities the fellow needed to perform the research. It was sufficient.
- In our particular case, we had excellent involvement. We have been supporting this fellow's thesis advisor for years with AFOSR support. We shared common research interests.
- What is sufficient? Sufficient for what purpose? What would the goal of "involvement" be? Is it a requirement of the program, or simply desirable?

6. Did the fellow assigned to your laboratory take part in the summer research program? YES 18 NO 29 N/A 1
Comments:

- The work he did will be part of his Ph.D. thesis.
- An excellent opportunity/experience for the fellow. Strongly encourage continuation of summer research program.
- Excellent contributor.
- 1988 but not 1989.
- Continues thesis work.
- It would be good if Mr. McDonnell had participated in the program but his commitments at UCI for this summer would not permit his involvement.
- It would be good if Mr. Ellsworth had participated in the program.
- This is very worthwhile. It allows the student to interact with professionals involved in research as well as providing very sophisticated laboratory facilities and equipment to the student. In 8 weeks he has collected sufficient data for several technical papers which will go a long way towards his thesis.
- A 10 week summer visit would improve each party's involvement with the other organizations.
- This would have helped.

- He is performing experiments at WRDC to verify his theoretical results. Because of delays in fabrication of specimens and assembly of the unique test fixtures, he will not be able to complete the test program during the summer. He will return to WRDC at our expense during the fall to complete the experimental work. The scheduling of the visit will depend on when the remaining specimens get instrumented.
- The fellow spent his reserve duty time at RADC during the summer. He required summertime to continue his work at MIT.
- Not in summer 1989. He may participate in summer of 1990.
- I have had no contact with the fellow at all. After having no contact for months after receiving the papers, I believe I threw them out.
- Last summer was a good experience.
- He is making excellent progress. (High quality research).
- Not yet - tentatively summer 1990.
- R. Brown just selected to start fellowship (and graduate school) in Fall 1989.
- He was welcome to; but he needed home facilities.
- Needed to finish academic requirements.
- Summer interaction will no doubt be more useful in the years to come once a firm research focus has been determined.
- The fellow participated enthusiastically in the summer program; the results are highly likely to produce a publication in the scientific literature.
- In 1988 - nothing much since.
- Continued success. Rodger has been the near equivalent of a port-doc-fellow.
- He was evidently too busy with coursework and research.

7. Please furnish any recommendations you may have on improving the LGFP._____

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- I would like to see it made even more flexible, with opportunity to take courses at other schools, semester spent in Govt labs, etc.
- Stronger ties between University research and Air Force programs.
- N/A.

- More publicity so more applicants to choose from.
- System appears to work.
- I think that the students should be required to take part in the summer research program. The student's advisor might also participate in the Summer Faculty Program at the same time.
- This is my first involvement and its just barely beginning. So far, so good.
- Include periodical travel funds for the Graduate Fellow to visit the host lab in cases where the research is being performed away from the host lab.
- This program has worked exceedingly well providing a balanced growth of the student and real contributing to AF research.
- I would tend to pick. 1) a local university, or 2) one where I had work with the student's advisor, or 3) one who would on a summer fellowship at our lab. I'd like more direct involvement for max utility.
- None at the moment.
- Perhaps a social gathering for all fellows early in the summer - the mentor should not have to feel as responsible for ensuring the participate has a good time outside the lab.
- Closer communication.
- Increase communication.
- None.
- None.
- Fine program - no recommendations.
- A year from now I will be better equipped to respond.
- Not at this time.
- Please emphasize the importance of the fellow interacting with the mentor to the student's graduate advisor so that participation in the summer program will be encouraged.
- More frequent communication.
- For me, it just came out of the blue - but, has been quite successful.
- None - It is an excellent program & well run by UES.
- I think the LGFP is outstanding, providing you can find a fellow in your specific field. This summer we did an it was outstanding.
- Made more of them available.
- Overall, the program works just fine as a vehicle to find students interested in AF research areas.
- Good program - recommend to continue.
- I have none.
- Double the number of fellowships.

8. Please furnish any other comments or suggestions to improve the program in future years.

- How about some travel budget for scientific conference attendance, or lab visits.
- More frequent visits by fellow, possibly two chances to participate in summer research program.
- N/A.
- Limit to senior - post masters student's limit 2 years so more may take part.
- Special consideration might be given to the arrangement where the student and his advisor both participate in the summer research program.
- Please ask me again next year!
- Publish annual proceedings of research accomplished by graduate fellows. This would help researchers learn more about young, rising graduates work.
- Tom Mullen is an excellent student, well-deserving at the fellowship and has very productive in the lab. I believe that a summer visit should be required of all fellows. Hopefully, future fellow will be able to benefit a contribute from the fellowship to the same extent as Tom.
- More involvement of fellows with lab. Have them amend each summer in labs. Keep lab up-to-date on fellows progress.
- See 7 above.
- None.
- Good program. Gary Petersen has been a big help already. He's learned a lot too.
- Ditto, above comment.
- Not at this time.
- Make some summer participation with the mentor mandatory.
- See 7 above.
- If Rodger and his thesis advisor at MIT had not found me, I'd never known about this. Maybe some better lab visibility if the program is underutilized.
- I wish it could be expanded to include more fellows.
- None.
- More funds!
- Would like to have Todd Nichols back to continue his work.
- No comments. I feel the program is working quite well.

- This is a very strange set of questions.

END